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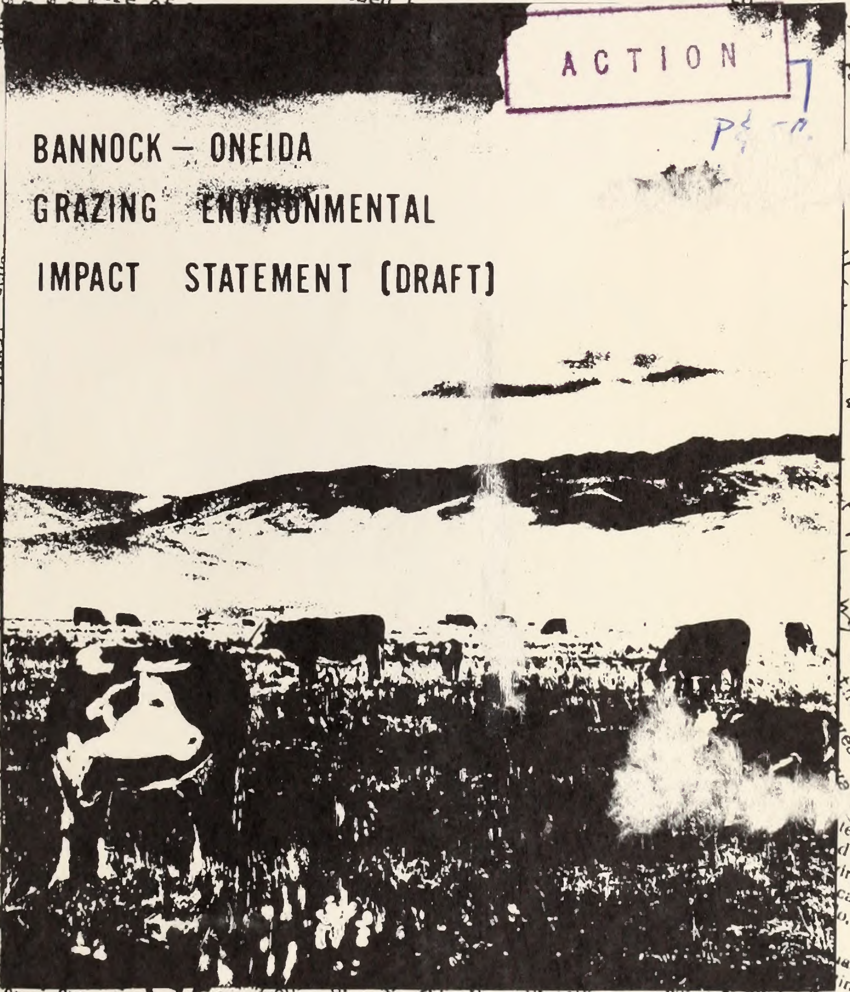

Oneida-Bannock Grazing Is Subject

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We have forwarded for your review and comment the draft environmental impact statement on proposed range management in the Bannock-Oneida Resource Area of southeastern Idaho. This draft has been prepared by a team of resource specialists from the Bureau of Land Management's Burley District.

Please keep your copy of the draft, as only an abbreviated final will be printed. The final environmental impact statement will be prepared using the comments received through the public review process on contents of the draft. The final will contain a history of consultation and coordination and an addendum section recording changes made in the draft. This approach will result in substantial cost savings, since only the responses to comments and the corrections and modifications will be reprinted. Thus, this document must be used in conjunction with the abbreviated final, which will be distributed at a later date.

Two public hearings will be scheduled for the purpose of receiving oral and written testimony on this document. The hearings will be held on separate evenings in Malad and Pocatello, Idaho in late April, 1980. Information regarding the specific location and time of each hearing will be publicized at a later date. We have attached further information on the public hearings, including a registration form should you choose to testify. In order to have a list of witnesses available in the Burley District Office one day before the hearing, we must have the registration forms in this office at the close of business two days prior to the scheduled hearings. Should you have any questions concerning the hearings, please call our team leader, Tim Hartzell, at (208) 678-5514.

Written comments are invited, and these must be received on or before April 25, 1980, to be considered in the preparation of the final environmental impact statement. Oral and written comments will receive equal consideration

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in the final environmental impact statement. Written comments are to be submitted to:

Tim Hartzell
Bureau of Land Management
Bannock-Oneida Team Leader
Route 3, Box 1
Burley, ID 83318

We look forward to your comments and thank you for your past and future assistance in our efforts to manage public lands in the best interests of all concerned.

Sincerely yours,

Nick James Cozakos

Nick James Cozakos
District Manager

Enclosures (2)

1. Hearings Handout
2. Registration Form

HEARINGS HANDOUT

GENERAL INFORMATION REGARDING THE PUBLIC HEARINGS ON THE DRAFT ENVIRONMENTAL IMPACT STATEMENT OF PROPOSED RANGE MANAGEMENT IN THE BANNOCK-ONEIDA RESOURCE AREA, IDAHO.

Public Hearing Locations

Malad, Idaho

and

Pocatello, Idaho

Authority

The hearings are held pursuant to the objectives of the National Environmental Policy Act (PL 91-190; 83 Stat. 852,853).

Purpose

The hearings are for the purpose of receiving comments (testimony) on the analysis of the proposed action and the four (4) alternatives addressed in the draft environmental impact statement. Testimony presented at these hearings will be used in the preparation of the final environmental impact statement.

Composition of the Hearing Panel

The public hearing proceedings will be conducted by a hearing leader. The hearing leader will be accompanied by Bureau of Land Management personnel involved in preparation of this draft environmental impact statement. The hearing leader or Bureau personnel recognized by the leader may ask questions of the witness for the purpose of clarifying points in the testimony. All proceedings of the hearing will be recorded for use in preparation of the final document.

Oral Statments

Persons wishing to give testimony will be limited to ten (10) minutes, with written submissions invited at the hearing.

Prior to giving testimony at the public hearing, participants are requested to complete the attached hearing registration form. Registration forms may also be obtained by contacting Tim Hartzell, Team Leader, Bureau of Land Management, Bannock-Oneida Environmental Impact Statement, Route 3, Box 1, Burley, ID 83318, telephone (208) 678-5514. Registration forms must be returned to the above address at least two days prior to the scheduled date of the hearing. Participants may register at the registration desk prior to the hearing. Time preferences for presentation of oral statements will be honored whenever possible. A tentative listing of speakers, in the order they will be called, will be available the day before each hearing at the Bureau of Land Management, Burley District Office, or at the registration desk the night of each hearing.

After the last witness has been heard, the hearing leader will consider the request of any other person present and wishing to testify. Only one witness will be allowed to represent the viewpoints of a single organization. However, any witness will be permitted to give germane testimony if it is offered as the views or opinions of a private citizen.

General

Witnesses must direct their testimony to the contents of the document and to specific aspects of the proposed Bannock-Oneida range management proposal or alternatives to the proposal.

Written Statements

Written statements from those unable to attend the hearing should be addressed to:

Tim Hartzell
Team Leader
Bureau of Land Management
Bannock-Oneida Environmental Impact Statement
Route 3, Box 1
Burley, ID 83318

Written statements will be accepted on or before April 25, 1980.

PUBLIC HEARINGS REGISTRATION FORM

For public hearings on the draft environmental impact statement of proposed range management in the Bannock-Oneida area of southeastern Idaho.

(Please Print)

To: Tim Hartzell, Team Leader, Bureau of Land Management, Bannock-Oneida Environmental Impact Statement, Route 3, Box 1, Burley, ID 83318.

From: Name ______________________________

Street Address ______________________________

City, State ______________________________ Zip Code __________

Representing ______________________________

I wish to appear at the public hearing on ______________, 1980, to express my views.

I intend to submit written documentation: Yes __________ No __________

____
Signature

Verbal testimony will be limited to 10 minutes; written testimony will be accepted at the above address until close of business on April 25, 1980. Registration forms are to be submitted to the Burley District Office before the close of business two days prior to the hearing.

DEPARTMENT OF THE INTERIOR

BANNOCK-ONEIDA GRAZING
ENVIRONMENTAL IMPACT STATEMENT
(DRAFT)

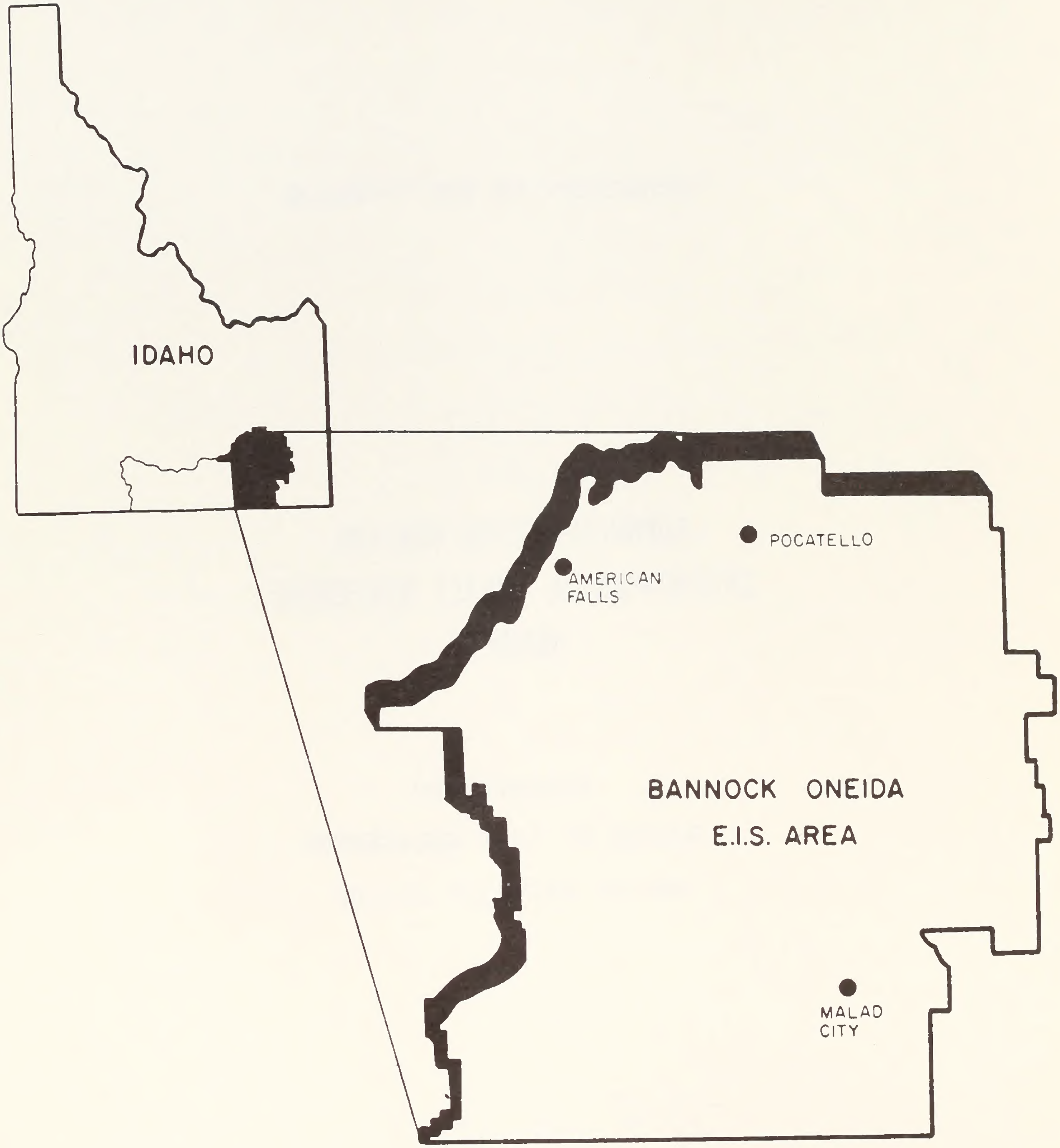
Prepared by

BUREAU OF LAND MANAGEMENT

BURLEY DISTRICT OFFICE

R Buffington

State Director, Idaho State Office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MALAD CITY

BANNOCK-ONEIDA GRAZING
ENVIRONMENTAL IMPACT STATEMENT

(X) Draft ( ) Final Environmental Impact Statement

1. Type of Action: (X) Administrative ( ) Legislative

2. Responsible Agencies:

   a. Lead Agency: Department of the Interior, Bureau of Land Management

   b. Cooperating Agencies: None

3. Abstract:

The Bannock-Oneida Grazing Environmental Impact Statement analyzes the effects of livestock grazing on 431,508 acres of public land in southeastern Idaho. Five grazing management alternatives are presented for consideration and are analyzed in terms of their projected economic, social and environmental effects. Each alternative analyzes a different level of allocating the vegetative resource among competing uses.

This document will be used to determine the proper level of livestock grazing on the public lands, using the multiple use sustained-yield concept. Its contents exemplify the conflicting demands being placed on public lands throughout the west and the fact that concessions are necessary to achieve parity between resource needs and resource use. The rangeland management program selected for the subject public land will be based upon the analysis presented in this document.

4. Comments Must Be Received By: April 25, 1980

5. Send Comments To - And For Further Information Contact:

Nick James Cozakos, District Manager or
Tim Hartzell, Team Leader
Bureau of Land Management
Route 3, Box 1
Burley, Idaho 83318

Telephone (208) 678-5514

SUMMARY

This Bannock-Oneida Grazing Environmental Impact Statement (EIS) analyzes the effects of livestock grazing on 431,508 acres of public land administered by the Bureau of Land Management, Burley District, in southeast Idaho.

The EIS is being prepared between the recommendation and decision phases of the Burley District's land-use planning process. That process has included detailed resource inventories, individual resource development plans, conflict analysis and multiple use recommendations. This EIS serves as an analytic instrument which will be used in deciding a course of action affecting the range land. The decision evolving from this study will determine final vegetation allocations among livestock, wildlife and non-consumptive uses such as watershed.

Issues and Controversy

The contribution of the general public, special interest groups, other federal agencies and State agencies to the planning effort has been considerable. These individuals and organizations were consulted at regular intervals throughout the planning and EIS "scoping" processes. As a result of this consultation, the principal conflict related to livestock grazing surfaced as economic effects on ranchers versus environmental effects on wildlife habitat.

While the identification of these issues enabled the formulation of alternatives to be analyzed in the EIS, two areas of controversy remain unresolved. The first is the effect of livestock grazing on aquatic wildlife habitat and riparian vegetation. The central issue yet to be resolved is how to manage riparian ecosystems without either (1) disallowing livestock grazing or (2) completely fencing off riparian areas from livestock. Within the Bannock-Oneida Resource Area, grazing systems without special protective measures will not maintain or restore a healthy riparian zone.

As with all grazing EISs, a second controversy centers on the effect of forage allocations on individual rancher and community incomes. In response to this controversy, the initial livestock vegetation allocation called for in Alternative A (Proposed Action) would provide a forage level 1.6 percent greater than the five-year average grazing use, as established by livestock operators in the EIS area during the 1974 to 1978 grazing seasons, and a long-term forage level 15.5 percent above the five-year average. However, some individual permittees or allotments would receive downward adjustments. These adjustments could cause economic hardships.

Alternatives and Consequences

Alternative A (Proposed Action) is designed to achieve a balanced mix of uses and ensure sustained yield from the rangeland ecosystem. The underlying premise is that livestock grazing and other renewable resources are compatible as long as livestock use does not exceed the productive capability of the land.

Alternative A would allocate vegetation in accordance with the inventoried rangeland carrying capacity. Rangeland developments such as seedings and water pipelines would be undertaken on a site specific basis to increase both the supply and useability of the forage, and livestock grazing systems would be initiated to make more efficient use of that forage.

The vegetative resource would be favorably affected by Alternative A. Overall range condition and trend would improve, and total vegetation production increase by 20 million pounds, with related resources, including soils, watershed, wildlife and visual resources, benefitting as a result.

Other management options are available, including Alternative B (Increased Livestock Use), Alternative C (No Livestock Grazing), Alternative D (Decreased Livestock Use) and Alternative E (No Action).

Alternative B is designed to maximize livestock use of the inventoried vegetative resource. New grazing systems, range improvements in addition to those proposed in Alternative A (Proposed Action) and shifting of livestock use would, at the end of 15 years, bring the grazing capacity up to the total active grazing preference controlled by permittees in the EIS area. This would be a 27 percent increase above the five-year (1974-1978) average licensed use level for the area. Economic benefits for livestock operators would be maximized. This positive economic aspect would not be achieved without severe environmental costs, including an overall decline in wildlife, continued decline in fishery and waterfowl nesting habitat, continued impact on cultural resources, increased soil erosion and a decline in visual quality.

Alternative C (No Livestock Grazing) would allow natural ecologic process to prevail. Native vegetation would flourish, and riparian areas would no longer be stressed from concentrated livestock use. From an ecological standpoint, this alternative is quite favorable; however, it is not free of environmental costs. The overall human environment would suffer as a result of substantial economic losses.

Alternative D (Decreased Livestock Use) would maximize benefits to wildlife and cold water fisheries, while continuing livestock grazing at 51 percent of the five-year average licensed use level. Range condition and trend would improve, and total vegetation production increase by nearly 27 million pounds. Forage in the amount required to meet 1990 Idaho Department of Fish and Game big game population projections would be available. Fencing would maximize fishery quality on selected streams, though unfenced riparian areas would still be overgrazed. Hunting and fishing recreation opportunities would be maximized, but overall socio-economic conditions would be adversely affected.

Alternative E (No Action) would preserve the status quo. Livestock forage allocation would remain at the 1974-78 average licensed use level, resulting in the continued overgrazing of 32 percent of the public land in the EIS area. Wildlife numbers and species diversity would continue to decline in the long term. Soil loss would increase and watershed condition worsen. On the positive side, though, this alternative would not disrupt local economics or lifestyles. A "No Action" decision would be favorably viewed by a regional public inclined to be suspicious of any change initiated by the federal government.

As can be seen from this brief overview, it will be difficult, at best, to achieve an equitable balance between resource needs and the needs of the public. Five alternatives are studied in this EIS, none of which is without impacts. The question at issue: Which management strategy would provide the greatest harmony between man and nature, now and for generations to come?

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CHAPTER 1

PURPOSE AND NEED

This environmental impact statement (EIS) analyzes the effects of livestock grazing on 431,508 acres of public land administered by the Bureau of Land Management, Burley District. It is prepared in compliance with the National Environmental Policy Act and in specific response to litigation in U.S. District Court, for the District of Columbia, entitled Natural Resources Defense Council, Inc. et al. v. Rogers C. B. Morton et al., Case #1983-73.

More practically, this document serves as an analytic instrument which will be used in deciding a course of action affecting certain range lands in southeastern Idaho. The decision evolving from this study will determine final vegetation allocations among livestock, wildlife and non-consumptive uses such as watershed and aesthetics.

The Bannock-Oneida EIS is being prepared between the recommendation and decision phases in the Burley District's land-use planning process. That process has included detailed resource inventories, program development and conflict analysis. It has also included a contracted survey of threatened or endangered plant species, formal consultation with the U. S. Fish and Wildlife Service with respect to the wintering bald eagle population in the EIS area, and a "scoping" process involving other federal agencies, State and local governments, special interest groups and the general public. As a result of these coordinated efforts, some specific resource problems related to livestock grazing have been identified. The purpose of the EIS is to assess those problems and alternative strategies for resolving them.

The contribution of the general public to the overall planning effort has been considerable. Grazing associations and ad hoc committees representing various interest groups and government agencies were consulted at regular intervals throughout the land-use planning process. Public meetings were held in connection with multiple use recommendations for the Bannock-Oneida Resource Area. Open meetings were held January 9, 1979, at American Falls in the afternoon and at Malad in the evening, and April 30, 1979, in Pocatello. A handout summarizing tentative land-use recommendations, including allocation of forage among competing uses, was distributed at each meeting. Local BLM representatives briefly discussed the rationale for each recommendation. As each component was presented, the meeting ground rules called for questions from the audience, or statements of support or dissent. If someone dissented, he or she was invited to present an alternative proposal with supporting rationale. All comments and suggestions were considered before finalizing the multiple use recommendations.

As the time for preparing an environmental impact statement drew near, public participation was intensified. An EIS scoping meeting was held April 30, 1979, at the Holiday Inn of Pocatello. A "Scoping Process" Notice of Intent was published in the April 12 Federal Register. The notice presented specific components of the Proposed Action and gave a short description of suggested alternatives to the proposal. Comments were solicited on additional alternatives to be considered and critical issues to be addressed in the EIS. In addition to the Federal Register notice, agencies and individuals were notified about the scoping meeting via phone calls, letters and news releases. Approximately 60 people attended the meeting, which received coverage in the Idaho State Journal and on Channel 6, KPVI television, in Pocatello.

To ensure involvement of the Shoshone-Bannock Tribes in the scoping process, the District Manager and Bannock-Oneida Area Manager met on May 8, 1979, with the Tribal Business Council to solicit the council's advice on alternatives and key problems to be analyzed in the EIS. Burley District officials have also met on several occasions with the Bureau of Indian Affairs and tribal officials and have participated in the Tribal Council's Ft. Hall land-use planning meetings.

Through these and other contacts, BLM personnel in the Burley District have made every effort to inform and involve all groups, organizations and individuals who might be affected by land-use decisions in the Bannock-Oneida area. The selection of alternatives to be considered, and of issues for detailed analysis, was based directly on public input received during the planning and EIS scoping processes.

The issues identified as most significant can be expressed in a series of eight questions:

1. If livestock operators were forced to reduce their use of public land for grazing, what would be the economic effects on the ranchers involved?
2. If grazing were to continue at its present level, what would be the environmental consequences over the long term?
3. What would result, environmentally and economically, if new land treatments and grazing systems were designed to accommodate an increase in livestock use to the full level of active preference?
4. What would result, environmentally and economically, if livestock were completely removed from the public lands?
5. What program of action would be most favorable for recreationists, especially hunters and fishermen?
6. What program of action would provide the highest level of habitat diversity for wildlife species in the EIS area?
7. How are cultural resources affected by livestock grazing, and how can any adverse effects be mitigated?
8. If grazing privileges were to be reduced, what measures could be taken to assure that financial losses to the livestock operators could be minimized, both in intensity and in duration?

As will be seen in the following chapter, each management alternative developed for analysis represents a restatement of, or an answer to, one or more of these eight central questions.

CHAPTER 2

ALTERNATIVES INCLUDING THE PROPOSED ACTION

This chapter defines and evaluates each alternative and concludes with a tabular comparison of projected impacts. Five alternatives are presented for consideration, the essentials of which are summarized in Table 2-1.

ALTERNATIVE A

PROPOSED ACTION

The Proposed Action is designed to implement an improved rangeland management program on 85 grazing allotments totaling 421,164 acres of public land in the Bannock-Oneida EIS area. Land status and acreage for each allotment is provided in Table 2-2, and locations are shown on Map 2-1 in the packet at the back of this volume.

Initial vegetative allocation would be achieved by adjusting livestock numbers, seasons of use or a combination of both over a period of three years, with the last year projected to be the 1983 grazing season. Proposed range developments would be completed on a staggered basis between 1981 and 1984. Improved livestock management through grazing systems and range developments would provide forage in addition to that intially allocated. The additional forage from land treatments would be available by 1985, with that from grazing systems fully available by 1995. This additional forage would be allocated as it became available. Stocking levels, seasons of use and range developments would be coordinated with the livestock operators. Grazing management systems would be incorporated into Allotment Management Plans (AMPs) developed in cooperation with the livestock operators, Idaho Department of Fish and Game, Idaho Department of Public Lands, U. S. Forest Service, Soil Conservation Service and other interested parties, as well as landowners within the allotments.

Table 2-1

Summary of Alternatives

	Proposed Action	Increased Livestock Use	No Livestock Grazing	Decreased Livestock Use	No Action-Existing Situation
	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
VEGETATIVE ALLOCATION					
AUMs (initial/long-term)					
To Livestock	66,164/75,234[1]	72,329/82,462[2]	0	33,082	65,149
To Wildlife	18,021/22,165[3]	17,758	25,023	25,023	18,021/17,954[4]
Pounds of Vegetation (long-term)					
To Livestock	60,187,200	65,969,600	0	26,465,600	52,119,200
To Wildlife	17,732,000	14,206,400	20,018,400	20,018,400	14,363,200
To Non-Consumptive Uses	334,198,355	334,148,265	399,107,032	372,641,432	327,598,356
GRAZING MANAGEMENT					
Number of Allotments	85	85	0	85	85
Systems (Acres)					
Rest Rotation	157,403	157,403	0	146,062	146,062
Deferred Rotation	197,942	197,942	0	25,566	25,566
Deferred Use	32,697	32,697	0	28,808	28,808
Seasonal Use	31,482	31,482	0	219,088	219,088
Unallotted	5,732	5,732	431,508	5,732	5,732
Protective Management	6,252	6,252	0	6,252	6,252
Grazing Treatments (Acres)					
Early Livestock Grazing (Prior to seedripe)	228,077	228,077	0	316,985	316,985
Livestock Grazing (After seedripe)	144,708	144,708	0	59,581	59,581
Yearlong Rest From Livestock Grazing	58,723	58,723	431,508	54,942	54,942
Season of Use					
Spring Turnout Delay (% Total Acres)					
No Change	58	58	—	58	100
5 to 15 days	36	36	—	36	0
16 to 25 days	2	2	—	2	0
26 to 35 days	4	4	—	4	0
36 to 45 days	0	0	—	0	0
RANGE DEVELOPMENTS					
New Projects					
Water Trough (no.)	16	16	0	0	0
Spring Development (no.)	8	8	0	0	0
Catchment (no.)	2	2	0	0	0
Reservoir (no.)	2	2	0	0	0
Guzzler (no.)	2	0	0	2	0
Pipeline (mi.)	15.5	15.5	0	0	0
Fence (mi.)	17.75	14	0	15.6	0
Cattleguard (no.)	17	17	0	0	0
Land Treatments					
Chemical Spray (Acres)	6,686	7,536	0	0	0
Chaining & Aerial Seeding (Acres)	13,440	16,160	0	0	0
Burning & Drill Seeding (Acres)	600	600	0	0	0

[1] The long-term increase would be a result of additional forage expected to accrue from implementation of grazing systems (3,145 AUMs) and land treatments (5,925 AUMs). The forage realized from grazing systems would be available by 1985, the rest by 1995.

[2] The long-term increase would be a result of additional forage expected to accrue from implementation of grazing systems (3,145 AUMs) and land treatments (6,988 AUMs). The forage realized from grazing systems would be available by 1985, the rest by 1995.

[3] The long-term increase would be a result of additional forage expected to accrue from implementation of grazing systems (2,844 AUMs) and land treatments (1,300 AUMs). The forage realized from grazing systems would be available by 1985, the rest by 1995.

[4] Grazing by mule deer above inventoried forage capacity on some allotments and deer/cattle forage competition would result in a long-term decline in available wildlife forage.

Table 2-2

Land Status and Acreages

Section 3 Acreages

Ownership (Acres)

Allotment	Public	State	Private	Total Acreage
Houtz Canyon	2,967	...	969	3,936
Table Mountain[1]	1,040	1,560	320	2,920
Cedar Ridge[1]	600	1,020	60	1,680
Side Canyon	120	...	800	920
Cold Water	152	...	...	152
Register Rock	80	...	480	560
Rock Creek	400	...	1,560	1,960
Curlew	139,073	3,028	3,880	147,361[2]
South Stone	11,962	...	...	11,962
South Bull	4,938	640	1,580	7,158
Pleasantview	59,026	3,246	7,534	69,806
Samaria	25,283	2,622	4,185	32,090
Walker	552	...	566	1,118
Madsen	-Acreage added into Samaria Allotment-			
Hanzel Mountain	12,313	...	1,019	13,332
Big Onion	7,050	794	10,662	18,506
Cedar Mountain	2,001	320	669	2,990
Dairy Creek	3,320	...	1,280	4,600
East Daniels	120	640	1,518	2,278
Deep Creek	161	103	139	403
East Fork	7,360	6,560	704	14,624
Roy Arbon	46,056	3,600	16,819	66,896[3]
Indian Springs	10,407	1,620	2,920	14,947
Black Rock	11,141	640	4,527	16,308
Michaud Creek	4,215	...	1,417	5,632
2 1/2 Mile	2,618	...	4,993	7,611
Moonlight Mine	2,223	...	4,069	6,292
Rapid Creek	3,051	...	704	3,755
Inkom	5,511	639	1,366	7,625[4]
Stanger	548	1	109	678[5]
Shoestring	2,281	...	941	3,222
Bullock	195	...	546	741
Goodenough	23	...	...	23
McCammon	3,248	...	710	3,958
Price	265	...	99	364
Toponce	4,291	...	5,474	9,765
Hebdon	791	...	19	810
Taylor Mountain	411	...	40	451
Bancroft	11,000	640	2,711	14,351
Wistisen	215	...	31	246
Fish Creek	2,550	...	1,812	4,362
Rowsell	40	...	...	40
Lund	5,569	...	1,179	6,748
Crystal	5,240	640	884	6,764
Swim	281	...	408	689
Tate Ind.	80	...	...	80
Myler	120	...	...	120
Garden Creek	357	...	90	447
Stewart Ind.	988	...	5	993
Soloago	3,438	746	2,827	7,011
Rogers Ind.	812	540	1,080	2,432
Hatley	229	...	...	229
Preslar Ind.	40	...	...	40
Rocks	499	2,861	...	3,360
Johnson	1,114	...	46	1,160
Anderson	2,360	...	544	2,904
Howe	80	...	159	239
Section 3 Totals	410,805	32,460	94,454	539,649

Section 15 Acreages

Ownership (Acres)

Allotment	Public	State	Private	Total Acreage
L. Allen	520	...	...	520
B. Almond	53	...	...	53
T. Bloxham	80	...	...	80
A. Brady	40	...	...	40
C. Criddle	40	...	...	40
Cambridge	1,507	...	...	1,507
N. Casperson	440	...	...	440
Criddle and Son	564	...	...	564
R. Davis	340	...	...	340
Egan	635	...	...	635
Cottonwood	920	...	...	920
A. Evans	200	...	...	200
W. Fuhriman	40	...	...	40
D. Hadley	80	...	...	80
Hatley Ind.	114	...	...	114
G. Jensen	33	...	...	33
S. Kent	95	...	...	95
Larson	40	...	...	40
McNee	160	...	...	160
Marley	254	...	...	254
P. Morrison	120	...	...	120
W. T. Evans	240	...	...	240
Rt. Hand Grazing	600	...	...	600
Salveson	1,519	...	...	1,519
Servoss Bros.	200	...	...	200
Thompson	1,340	...	...	1,340
Tippits	65	...	...	65
L. Roberts	120	...	...	120
Section 15 Totals	10,359	...	...	10,359
Section 3 and 15 Totals	421,164	32,460	94,454	550,008

10,344 PUBLIC LANDS NOT WITHIN GRAZING ALLOTMENTS[6]

431,508 TOTAL PUBLIC LAND ACREAGE IN BANNOCK-ONEIDA EIS AREA

[1] This is an unallotted area. It is included in this table only because it receives some grazing use (non-renewable) each year.

[2] Includes 1,380 acres of public land administered by the U.S. Forest Service.

[3] Includes 421 acres of the Fort Hall Indian Reservation.

[4] Includes 109 acres of public land administered by the U.S. Forest Service.

[5] Includes 20 acres of public land administered by the U. S. Forest Service.

[6] Of these unallotted lands 4,092 acres would be available for livestock grazing. The remaining 6,252 acres would be set aside for watershed, aesthetics and wildlife purposes with no grazing permitted.

The overall objective of the Proposed Action is to protect and enhance environmental values with limited disturbance to the socio-economic status quo. As a means for achieving this objective, forage would be allocated in accordance with inventoried rangeland carrying capacities. Range developments (including land treatments) would be undertaken on a site specific basis, so as to increase the supply of available forage, and grazing systems would be initiated so as to make more efficient use of that forage. Forage not allocated for livestock and wildlife would be available for non-consumptive uses such as watershed and aesthetics.

Specific objectives of the Proposed Action include:

- --Upgrading the acreage presently in poor or fair range condition.
- --Eliminating areas of declining range trend and increasing the acreage in upward range trend.
- --Increasing the total vegetative biomass production.
- --Increasing the total wildlife forage production to meet Idaho Department of Fish and Game (IDFG) 1985 population projections.
- --Maintaining or improving current habitat conditions for upland game bird species and a variety of non-game species.
- --Protecting 1 1/4 miles of cold water fish habitat and increasing fish production.
- --Improving waterfowl nesting conditions and increasing brood-rearing success at Wiregrass Reservoir.
- --Curbing erosion and stabilizing or improving watershed conditions.
- --Maintaining or enhancing aesthetic quality.

VEGETATIVE ALLOCATION

The proposed vegetative allocations for consumptive uses were developed with the intention of supporting a variety of public values on a sustained yield basis, while providing for the physiological requirements of range vegetation so that the public range lands are maintained in a healthy, vigorous and productive condition.

First, the total vegetative biomass annually produced in the EIS area on public land was calculated to be 392,452,758 pounds based on a modified version of the *Ecological Site Inventory Method (ESIM)*.* After total forage (vegetation palatable to grazing animals) was determined, other factors further reduced the total amount of forage allocable for grazing. *Proper Use Factors* (which determine grazing use that can be made of a plant and still allow for the plant's physiological requirements and the diet preference of the grazing animal) were applied, as were considerations of *suitability*, long-term actual use, *utilization* and trend data, to determine the maximum amount of forage available for livestock use. In cases where actual use, utilization and trend data were unavailable, the ESIM results were the determining factors.

Forage is allocated in *Animal Unit Months (AUMs)*. Initial allocations in pounds and AUMs proposed for the 85 allotments are shown in Table 2-3. Allocations to big game were determined by considering existing populations of deer, elk, and antelope and by analyzing ESIM and proper use data. The initial livestock vegetative allocation of 66,164 AUMs was apportioned according to previously established grazing privileges and analysis of the ESIM, proper use, suitability, actual use and utilization data.

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*Terms appearing in italics are defined in the Glossary. See Appendix A for a description of the ESIM process and a detailed explanation of vegetative allocation methodology.

Table 2-4 portrays the present and proposed level of livestock grazing for each of the 85 allotments. The proposed grazing use includes the initial vegetative allocation of 66,164 AUMs, plus an additional 9,070 AUMs that would accrue through grazing systems and land treatments, making a total of 75,234 AUMs available for livestock use by 1995. To sum up:

Present Livestock Grazing (AUMs)		Proposed Livestock Grazing (AUMs)				Adjustments (%)			
Authorized Use (Active Class I Preference)	5 Year Average Licensed Use (1974-1978)	Initial Forage Allocation	Additional AUMs From:		Total Available AUMs (After 15 Years)	From Authorized Use		From 5 Year Average	
			Land Treatments (3-5 years)	Grazing Systems (5-15 years)		Short Term	Long Term	Short Term	Long Term
82,462	65,149	66,164	5,925	3,145	75,234	-19.8	-8.8	+1.6	+15.5

The initial and long-term vegetative apportionment among consumptive and non-consumptive uses would be as follows:

	Initial		Long Term	
	Pounds	Percent	Pounds	Percent
Allocation to Livestock	52,931,200	13	60,187,200	15
Allocation to Wildlife	14,206,400	4	17,732,000	4
Allocation to Non-consumptive Uses (watershed cover, aesthetics)	325,315,158	83	334,198,355	81
Total Vegetation	392,452,758	100	412,117,555	100

GRAZING MANAGEMENT

Livestock are very selective both as to plant species and areas grazed. The most palatable plants and the most accessible areas are grazed first and heaviest. Plants grazed heavily one year are usually heavily grazed the following year, which leads to their gradual destruction. This is also the trend for the preferred areas. When forage production of the most desirable plants falls below the needs of the animals, livestock will start grazing the less desirable species and/or areas, which leads to an ever enlarging area of range deterioration under unmanaged continuous grazing (Stoddart and Smith 1955; Hormay 1970). Grazing systems are utilized in regulating livestock use to improve the quality and quantity of desired vegetation, to alleviate a particular problem or to enhance multiple use values.

The harmful effects of selective grazing of preferred plants can be reduced by resting the range at appropriate intervals. An allotment is usually fenced into pastures to facilitate controlled pasture resting. A grazing formula is tailored for each allotment; the number of pastures and levels and seasons of grazing and resting are based on key forage physiological needs, existing range conditions and potential for improvement.

As a result of the proposed grazing systems, long-term forage increases totaling 3,145 AUMs would be accrued for livestock use.

Systems

The proposal for the EIS area involves four primary grazing systems: rest rotation (157,403 acres), deferred rotation (197,942 acres), deferred use

Table 2-3

Present Vegetation Production . . .

Allotment	Total Biomass	Total Forage		Total Forage Palatable to Livestock		Total Forage After Application of			
						Proper Use Factors (PUF) (All classes of Grazing Animals)		Suitability, Actual Use, Utilization & Trend in addition to PUF (Livestock)	
	Pounds	Pounds	AUMs*	Pounds	AUMs	Pounds	AUMs	Pounds	AUMs
Houtz Canyon	2,537,936	2,482,577	3,103	2,460,851	3,076	928,000	1,160	206,400	258
Table Mtn.	904,384	796,224	995	416,416	521	104,000	130	96,000	120
Cedar Ridge	521,760	459,360	574	240,240	300	68,000	85	60,000	75
Side Canyon	104,352	91,872	115	48,048	60	12,000	15	8,000	10
Cold Water	132,179	116,371	145	60,860	76	15,200	19	11,200	14
Register Rock	69,568	61,248	77	32,032	40	8,000	10	1,600	2
Rock Creek	347,840	306,240	383	160,160	200	40,000	50	19,200	24
Curlew	122,943,942	108,010,742	135,013	55,259,783	69,075	36,305,600	45,382	18,236,800	22,796
South Stone	8,442,807	7,399,003	9,249	3,948,955	4,936	3,746,400	4,683	2,467,200	3,084
South Bull	4,066,393	3,777,802	4,722	1,824,536	2,281	852,800	1,066	464,800	581
Pleasantview	56,306,150	53,572,716	66,966	29,149,474	36,437	26,545,600	33,182	8,948,800	11,186
Samaria	22,497,004	22,039,294	27,549	14,094,223	17,618	7,685,600	9,607	2,583,200	3,229
Walker	421,757	418,431	523	389,685	487	155,200	194	54,400	68
Madsen[1]									
Hanzel Mtn.	13,957,998	13,713,949	17,142	13,470,051	16,838	4,552,000	5,690	2,776,000	3,470
Big Onion	4,050,000	4,010,607	5,013	2,774,334	3,470	1,930,400	2,413	1,165,600	1,457
Cedar Mtn.	1,413,989	1,187,381	1,484	856,840	1,071	352,000	440	106,400	133
Dairy Creek	3,081,564	3,027,026	3,784	2,111,991	2,640	1,316,000	1,645	624,000	780
East Daniels	118,920	117,312	147	76,812	96	12,000	15	11,200	14
Deep Creek	159,551	157,394	197	103,056	129	16,000	20	16,000	20
East Fork	7,342,577	6,280,684	7,851	4,324,783	5,406	2,052,800	2,566	593,600	742
Roy Arbon	50,182,657	49,014,532	61,268	48,343,419	60,429	17,979,200	22,474	6,047,200	7,559
Indian Springs	7,246,210	7,018,788	8,773	6,725,991	8,407	2,578,400	3,223	980,800	1,226
Black Rock	12,731,013	12,299,124	15,374	11,782,909	14,729	3,888,800	4,861	1,558,400	1,948
Michaud Creek	4,120,753	3,667,518	4,584	2,729,698	3,412	1,441,600	1,802	569,600	712
2½ Mile	2,606,738	2,448,195	3,060	1,977,524	2,472	860,000	1,075	349,600	437
Moonlight Mine	2,953,420	2,890,727	3,613	2,864,446	3,581	776,800	971	544,800	681
Rapid Creek	3,863,071	3,822,641	4,778	2,311,070	2,889	1,144,800	1,431	363,200	454
Inkom	6,559,315	5,580,072	6,975	4,507,418	5,634	2,053,600	2,567	680,800	851
Stanger	574,909	541,940	677	349,718	437	199,200	249	97,600	122
Shoestring	3,054,001	2,959,781	3,700	2,442,519	3,053	1,070,400	1,338	471,200	589
Bullock	95,097	87,687	110	64,384	80	30,400	38	10,400	13
Goodenough	50,370	50,140	63	50,140	63	12,000	15	10,400	13
McCammon	3,535,868	3,051,717	3,815	2,960,992	3,701	990,400	1,238	604,000	755
Price	357,062	289,720	362	289,720	362	70,400	88	59,200	74
Toponce	4,527,852	4,455,561	5,569	3,991,768	4,990	2,048,000	2,560	1,214,400	1,518
Hebdon	927,574	867,745	1,085	693,661	867	291,200	364	96,800	121
Taylor	394,202	370,224	463	355,740	445	123,200	154	78,400	98
Bancroft	8,572,861	7,693,168	9,616	5,901,815	7,377	2,394,400	2,993	980,000	1,225
Wistisen	236,325	220,436	276	148,962	186	84,800	106	43,200	54
Fish Creek	2,893,391	2,598,934	3,249	2,556,092	3,195	852,800	1,066	443,200	554
Rowsell	24,000	18,960	24	18,960	24	3,200	4	3,200	4
Lund	4,247,088	3,756,529	4,696	3,400,508	4,251	1,133,600	1,417	440,800	551
Crystal	4,500,027	4,197,155	5,246	3,026,596	3,783	1,726,400	2,158	912,800	1,141
Swim Ind.	310,323	308,817	386	250,478	313	130,400	163	76,800	96
Tate Ind.	68,560	66,400	83	58,800	74	19,200	24	9,600	12
Myler	115,200	98,880	124	87,240	109	38,400	48	20,000	25
Garden Creek	500,110	475,674	595	456,153	570	162,400	203	79,200	99
Stewart Ind.	1,076,842	1,008,805	1,261	871,208	1,089	368,000	460	167,200	209
Soloago	3,274,501	2,861,381	3,577	2,814,406	3,518	963,200	1,204	560,000	700
Rogers Ind.	1,480,192	1,443,446	1,804	1,380,140	1,725	448,800	561	248,800	311
Hatley	133,600	118,744	148	101,376	127	43,200	54	20,800	26
Preslar Ind.	46,320	34,320	43	32,920	41	8,000	10	6,400	8
Rocks	2,173,934	1,464,134	1,830	456,512	571	286,400	358	211,200	264
Johnson	985,098	958,524	1,198	755,208	944	301,600	377	90,400	113
Anderson	978,437	959,856	1,200	431,354	539	725,600	907	241,600	302
Howe	59,626	48,348	60	48,348	60	8,000	10	8,000	10
L. Allen	663,200	558,046	698	506,514	633	180,800	226	96,000	120
B. Almond	29,036	29,036	36	16,014	20	10,400	13	6,400	8
T. Bloxham	38,800	38,800	49	5,840	7	4,000	5	1,600	2
A. Brady	13,040	11,760	15	2,640	3	1,600	2	800	1
C. Criddle	9,600	5,440	7	4,000	5	1,600	2	800	1
Cambridge	1,003,798	945,950	1,182	522,592	653	416,000	520	172,000	215
N. Casperson	198,110	156,801	196	145,005	181	56,800	71	25,600	32
Criddle & Sons	464,928	426,868	534	297,844	372	138,400	173	85,600	107
R. Davis	160,770	115,004	144	27,228	34	28,800	36	10,400	13
Egan	519,408	462,259	578	105,263	132	60,800	76	25,600	32
Cottonwood	761,022	682,500	853	190,432	238	198,400	248	24,000	30
A. Evans	132,963	94,596	118	69,345	87	34,400	43	20,800	26
W. Fuhriman	16,650	5,050	6	3,258	4	1,600	2	800	1
D. Hadley	19,550	18,512	23	13,374	17	7,200	9	5,600	7
Hatley Ind.	96,560	91,360	114	81,000	101	28,000	35	16,800	21
G. Jensen	23,001	15,015	19	11,550	14	5,600	7	3,200	4
S. Kent	22,560	19,411	24	6,768	8	13,600	17	13,600	17
Larson	58,212	51,744	65	43,512	54	15,200	19	10,400	13
McNee	101,500	84,720	106	27,600	35	20,000	25	8,000	10
Marley	252,062	247,190	309	169,728	212	91,200	114	42,400	53
P. Morrison	63,618	60,603	76	33,585	42	20,000	25	8,000	10
W. T. Evans	173,896	165,704	207	90,824	114	59,200	74	33,600	42
Rt. Hand Graz. Ass.	494,240	463,348	579	263,020	329	164,000	205	69,600	87
Salveson	1,474,681	1,322,743	1,653	1,025,478	1,282	442,400	553	260,800	326
Servoss Bros.	178,500	178,500	223	176,610	221	105,600	132	104,800	131
Thompson	467,161	383,051	479	310,295	388	140,800	176	46,400	58
Tippits	54,684	48,188	60	36,457	46	14,400	18	8,000	10
L. Roberts	84,000	54,600	68	42,000	53	20,000	25	11,200	14
TOTALS	392,452,758	362,511,655	453,138	251,269,179	314,089	134,235,200	167,794	57,863,200	72,329

* All AUMs are based on 800 pounds of forage per AUM and were derived by dividing 800 into the pounds of forage, then rounding to the nearest whole AUM.

[1] This allotment is figured in with Samaria. It is a small area within the Samaria allotment used by Eric I. Madsen.

[2] Up to 516 AUMs of the cattle use could be made by horses.

and Proposed Forage Allocation

PROPOSED FORAGE ALLOCATION

Livestock						Wildlife						Total Proposed Allocation	
Cattle		Sheep		Horses		Deer		Antelope		Elk			
Pounds	AUMs	Pounds	AUMs	Pounds	AUMs	Pounds	AUMs	Pounds	AUMs	Pounds	AUMs	Pounds	AUMs
206,400	258	. . .	. .	. .	. .	23,200	29	. . .	. .	. . . .	. .	229,600	287
96,000	120	. . .	. .	. .	. .	8,000	10	. . .	. .	. . . .	. .	104,000	130
60,000	75	. . .	. .	. .	. .	8,000	10	. . .	. .	. . . .	. .	68,000	85
8,000	10	. . .	. .	. .	. .	4,000	5	. . .	. .	. . . .	. .	12,000	15
11,200	14	. . .	. .	. .	. .	4,000	5	. . .	. .	. . . .	. .	15,200	19
. . .	. .	. . .	. .	1,600	2	6,400	8	. . .	. .	. . . .	. .	8,000	10
19,200	24	. . .	. .	. .	. .	20,800	26	. . .	. .	. . . .	. .	40,000	50
17,090,400	21,363[2]	1,146,400	1,433	. .	. .	1,130,400	1,413	84,800	106	. . . .	. .	19,452,000	24,315
2,467,200	3,084	. . .	. .	. .	. .	400,000	500	. . .	. .	. . . .	. .	2,867,200	3,584
464,800	581	. . .	. .	. .	. .	34,400	43	. . .	. .	. . . .	. .	499,200	624
8,407,200	10,509	541,600	677	. .	. .	1,180,000	1,475	. . .	. .	. . . .	. .	10,128,800	12,661
2,475,200	3,094	108,000	135	. .	. .	620,000	775	. . .	. .	. . . .	. .	3,203,200	4,004
54,400	68	. . .	. .	. .	. .	. . . .	. .	. . .	. .	. . . .	. .	54,400	68
. . .	. .	. . .	. .	. .	. .	. . . .	. .	. . .	. .	. . . .	. .	. . .	. .
1,073,600	1,342	1,702,400	2,128	. .	. .	324,800	406	. . .	. .	. . . .	. .	3,100,800	3,876
1,165,600	1,457	. . .	. .	. .	. .	150,400	188	. . .	. .	102,400	128	1,418,400	1,773
80,000	100	. . .	. .	. .	. .	38,400	48	. . .	. .	. . . .	. .	118,400	148
624,000	780	. . .	. .	. .	. .	178,400	223	. . .	. .	35,200	44	837,600	1,047
11,200	14	. . .	. .	. .	. .	800	1	. . .	. .	. . . .	. .	12,000	15
16,000	20	. . .	. .	. .	. .	. . . .	. .	. . .	. .	. . . .	. .	16,000	20
593,600	742	. . .	. .	. .	. .	500,000	625	. . .	. .	. . . .	. .	1,093,600	1,367
3,570,400	4,463	1,342,400	1,678	. .	. .	3,100,000	3,875	. . .	. .	. . . .	. .	8,012,800	10,016
980,800	1,226	. . .	. .	. .	. .	260,000	325	. . .	. .	. . . .	. .	1,240,800	1,551
. . .	. .	580,800	726	. .	. .	524,000	655	. . .	. .	. . . .	. .	1,104,800	1,381
400,000	500	. . .	. .	40,000	50	131,200	164	. . .	. .	37,600	47	608,800	761
344,000	430	. . .	. .	5,600	7	153,600	192	. . .	. .	. . . .	. .	503,200	629
. . .	. .	160,000	200	. .	. .	142,400	178	. . .	. .	. . . .	. .	302,400	378
363,200	454	. . .	. .	. .	. .	131,200	164	. . .	. .	. . . .	. .	494,400	618
680,800	851	. . .	. .	. .	. .	422,400	528	. . .	. .	61,600	77	1,164,800	1,456
97,600	122	. . .	. .	. .	. .	71,200	89	. . .	. .	. . . .	. .	168,800	211
194,400	243	129,600	162	. .	. .	214,400	268	. . .	. .	. . . .	. .	538,400	673
10,400	13	. . .	. .	. .	. .	. . . .	. .	. . .	. .	. . . .	. .	10,400	13
10,400	13	. . .	. .	. .	. .	. . . .	. .	. . .	. .	. . . .	. .	10,400	13
98,400	123	253,600	317	. .	. .	280,000	350	. . .	. .	. . . .	. .	632,000	790
48,000	60	. . .	. .	. .	. .	. . . .	. .	. . .	. .	. . . .	. .	48,000	60
508,800	636	9,600	12	. .	. .	412,000	515	. . .	. .	. . . .	. .	930,400	1,163
27,200	34	. . .	. .	. .	. .	128,000	160	. . .	. .	. . . .	. .	155,200	194
. . .	. .	35,200	44	. .	. .	74,400	93	. . .	. .	. . . .	. .	109,600	137
980,000	1,225	. . .	. .	. .	. .	928,800	1,161	. . .	. .	. . . .	. .	1,908,800	2,386
43,200	54	. . .	. .	. .	. .	17,600	22	. . .	. .	. . . .	. .	60,800	76
66,400	83	336,000	420	. .	. .	163,200	204	. . .	. .	. . . .	. .	565,600	707
3,200	4	. . .	. .	. .	. .	. . . .	. .	. . .	. .	. . . .	. .	3,200	4
. . .	. .	402,400	503	. .	. .	201,600	252	. . .	. .	. . . .	. .	604,000	755
912,800	1,141	. . .	. .	. .	. .	190,400	238	. . .	. .	76,800	96	1,180,000	1,475
33,600	42	. . .	. .	. .	. .	16,800	21	. . .	. .	. . . .	. .	50,400	63
9,600	12	. . .	. .	. .	. .	7,200	9	. . .	. .	. . . .	. .	16,800	21
14,400	18	. . .	. .	. .	. .	7,200	9	. . .	. .	. . . .	. .	21,600	27
51,200	64	. . .	. .	. .	. .	24,800	31	. . .	. .	. . . .	. .	76,000	95
120,000	150	. . .	. .	. .	. .	48,000	60	. . .	. .	. . . .	. .	168,000	210
. . .	. .	484,800	606	. .	. .	126,400	158	. . .	. .	85,600	107	696,800	871
. . .	. .	40,800	51	. .	. .	48,000	60	. . .	. .	. . . .	. .	88,800	111
18,400	23	. . .	. .	. .	. .	24,800	31	. . .	. .	. . . .	. .	43,200	54
4,800	6	. . .	. .	. .	. .	3,200	4	. . .	. .	. . . .	. .	8,000	10
211,200	264	. . .	. .	. .	. .	40,000	50	. . .	. .	. . . .	. .	251,200	314
90,400	113	. . .	. .	. .	. .	134,400	168	. . .	. .	42,400	53	267,200	334
88,000	110	. . .	. .	. .	. .	. . . .	. .	. . .	. .	. . . .	. .	88,000	110
8,000	10	. . .	. .	. .	. .	. . . .	. .	. . .	. .	. . . .	. .	8,000	10
41,600	52	. . .	. .	. .	. .	21,600	27	. . .	. .	. . . .	. .	63,200	79
6,400	8	. . .	. .	. .	. .	. . . .	. .	. . .	. .	. . . .	. .	6,400	8
1,600	2	. . .	. .	. .	. .	. . . .	. .	. . .	. .	. . . .	. .	1,600	2
800	1	. . .	. .	. .	. .	. . . .	. .	. . .	. .	. . . .	. .	800	1
800	1	. . .	. .	. .	. .	800	1	. . .	. .	. . . .	. .	1,600	2
116,000	145	. . .	. .	. .	. .	278,400	348	. . .	. .	. . . .	. .	394,400	493
25,600	32	. . .	. .	. .	. .	31,200	39	. . .	. .	. . . .	. .	56,800	71
50,400	63	. . .	. .	. .	. .	88,000	110	. . .	. .	. . . .	. .	138,400	173
10,400	13	. . .	. .	. .	. .	. . . .	. .	. . .	. .	. . . .	. .	10,400	13
25,600	32	. . .	. .	. .	. .	. . . .	. .	. . .	. .	. . . .	. .	25,600	32
24,000	30	. . .	. .	. .	. .	155,200	194	. . .	. .	. . . .	. .	179,200	224
20,800	26	. . .	. .	. .	. .	13,600	17	. . .	. .	. . . .	. .	34,400	43
800	1	. . .	. .	. .	. .	. . . .	. .	. . .	. .	. . . .	. .	800	1
5,600	7	. . .	. .	. .	. .	. . . .	. .	. . .	. .	. . . .	. .	5,600	7
8,800	11	. . .	. .	. .	. .	19,200	24	. . .	. .	. . . .	. .	28,000	35
2,400	3	. . .	. .	. .	. .	3,200	4	. . .	. .	. . . .	. .	5,600	7
13,600	17	. . .	. .	. .	. .	. . . .	. .	. . .	. .	. . . .	. .	13,600	17
4,800	6	. . .	. .	. .	. .	10,400	13	. . .	. .	. . . .	. .	15,200	19
8,000	10	. . .	. .	. .	. .	. . . .	. .	. . .	. .	. . . .	. .	8,000	10
9,600	12	. . .	. .	. .	. .	26,400	33	. . .	. .	. . . .	. .	36,000	45
8,000	10	. . .	. .	. .	. .	. . . .	. .	. . .	. .	. . . .	. .	8,000	10
32,000	40	. . .	. .	. .	. .	. . . .	. .	. . .	. .	. . . .	. .	32,000	40
69,600	87	. . .	. .	. .	. .	51,200	64	. . .	. .	. . . .	. .	120,800	151
113,600	142	. . .	. .	. .	. .	210,400	263	. . .	. .	. . . .	. .	324,000	405
32,000	40	. . .	. .	. .	. .	. . . .	. .	. . .	. .	. . . .	. .	32,000	40
46,400	58	. . .	. .	. .	. .	94,400	118	. . .	. .	. . . .	. .	140,800	176
6,400	8	. . .	. .	. .	. .	8,000	10	. . .	. .	. . . .	. .	14,400	18
11,200	14	. . .	. .	. .	. .	8,800	11	. . .	. .	. . . .	. .	20,000	25
45,610,400	57,013	7,273,600	9,092	47,200	59	13,680,000	17,100	84,800	106	441,600	552	67,137,600	83,922

Table 2-4

Alternative A -

Proposed Livestock Forage Allocation

	PRESENT LIVESTOCK GRAZING USE				PROPOSED LIVESTOCK GRAZING USE				PROPOSED LIVESTOCK ADJUSTMENTS (%)			
						Additional AUMs Available From:			From Authorized Use		From 5 Yr. Average	
Allotment	Authorized Livestock AUMs	Suspended Non-Use	5 Yr. Average Licensed Use	Number and Class of Livestock	Short Term Initial Forage Allocation	Grazing Systems	Land Treatments	Long Term Total AUMs Available	Short Term	Long Term	Short Term	Long Term
Houtz Canyon	512	0	512	128c	258	15		273	-50	-47	-50	-47
Table Mountain	0	0	0	- - -	120			120	- -	- -	- -	- -
Cedar Ridge	0	0	0	- - -	75			75	- -	- -	- -	- -
Side Canyon	24*	0	24	24c	10			10	-58	-58	-58	-58
Cold Water	16*	0	16	8c	14			14	-13	-13	-13	-13
Register Rock	2*	0	2	- - - 10h	2			2	0	0	0	0
Rock Creek	24*	0	24	150c	24			24	0	0	0	0
Curlew	25,303	0	22,079	8,026c, 87h, 4,680s	22,796	1,368	4,861	29,025	-10	+14	+3	+31
South Stone	3,820	0	2,487	2,558c	3,084	185		3,269	-19	-14	+24	+31
South Bull	582	86	399	166c	581	35	175	791	0	+36	+46	+98
Pleasantview	18,051	0	13,850	4,864c, 2,755s	11,186	210	123	11,519	-38	-36	-19	-17
Samaria	5,471	0	3,716	2,608c, 750s	3,203	62		3,265	-41	-40	-14	-12
Walker	150	0	150	44c	68			68	-55	-55	-55	-55
Madsen	44	0	42	36c	26			26	-41	-41	-38	-38
Hanzel Mountain	3,470	0	1,134	502c, 4,800s	3,470	208		3,678	0	+6	+206	+224
Big Onion	1,959	0	1,914	1,464c	1,457	87	155	1,699	-26	-13	-23	-11
Cedar Mountain	100*	0	100	100c	100			100	0	0	0	0
Dairy Creek	1,014	0	784	264c	780	47		827	-23	-18	-1	+5
East Daniels	14	0	3	50c	14			14	0	0	+367	+367
Deep Creek	39	0	39	24c	20			20	-49	-49	-49	-49
East Fork	1,373	0	1,138	814c, 7h	742	45		787	-46	-43	-35	-31
Roy Arbon	6,141	0	5,434	1,424c, 4,670s	6,141	453		6,594	0	+7	+13	+21
Indian Springs	1,983	117	1,394	730c	1,226	74		1,300	-38	-34	-12	-7
Black Rock	726	0	693	- - - 2,714s	726	44		770	0	+6	+5	+11
Michaud Creek	550	0	526	250c, 10h	550	33		583	0	+6	+5	+11
2 1/2 Mile	539	0	539	387c, 8h	437			437	-19	-19	-19	-19
Moonlight Mine	200	0	167	- - - 909s	200			200	0	0	+20	+20
Rapid Creek	378	125	363	228c	454	23		477	+20	+26	+25	+31
Inkom	756	752	462	746c	851	15		866	+13	+15	+84	+87
Stanger	147	49	147	49c	122			122	-17	-17	-17	-17
Shoestring	222	183	230	24c 134s	405	13		418	+82	+88	+76	+82
Bullock	25	0	25	50c	13			13	-48	-48	-48	-48
Goodenough	26*	0	26	25c	13			13	-50	-50	-50	-50
McCammon	303	174	230	60c, 1,100s	440			440	+45	+45	+91	+91
Price	60	0	48	30c	60			60	0	0	+25	+25
Toponce	636	0	648	400c, 900s	648	38		686	+2	+8	0	+6
Hebdon	34	0	34	100c	34			34	0	0	0	0
Taylor	44	0	26	- - - 1,100s	44			44	0	0	+69	+69
Bancroft	2,200	497	1,918	423c 1,500s	1,225	25		1,250	-44	-43	-36	-35
Wistisen	32	22	33	111c	54			54	+69	+69	+64	+64
Fish Creek	503	0	255	15c 900s	503	30		533	0	+6	+97	+109
Rowsell	18	0	6	3c	4			4	-78	-78	-33	-33
Lund	503	0	299	- - - 1,165s	503	30		533	0	+6	+68	+78
Crystal	1,144	762	868	355c	1,141	69		1,210	0	+6	+31	+39
Swim Ind.	42	0	0	60c	42			42	0	0	- -	- -
Tate Ind.	31	0	30	30c	12			12	-61	-61	-60	-60
Myler	18	0	18	16c	18			18	0	0	0	0
Garden Creek	28	36	28	7c	64			64	+129	+129	+129	+129
Stewart Ind.	150	0	150	50c	150			150	0	0	0	0
Soloago	606	0	193	- - - 3,230s	606	36		642	0	+6	+214	+233
Rogers Ind.	51	0	51	- - - 750s	51			51	0	0	0	0
Hatley	25	0	25	25c	23			23	-8	-8	-8	-8
Preslar Ind.	7	0	4	21c	6			6	-14	-14	+50	+50
Rocks	700	650	419	432c	264			264	-62	-62	-37	-37
Johnson	143	0	57	26c	113			113	-21	-21	+98	+98
Anderson	110	0	0	79c	110			110	0	0	- -	- -
Howe	18*	0	18	60c	10			10	-44	-44	-44	-44
L. Allen	52	0	52	13c	52			52	0	0	0	0
B. Almond	9	0	9	2c	8			8	-11	-11	-11	-11
T. Bloxham	10	0	10	2c	2		32	34	-80	+240	-80	+240
A. Brady	6	0	6	1c	1			1	-83	-83	-83	-83
C. Criddle	6	0	6	1c	1			1	-83	-83	-83	-83
Cambridge	251	0	251	50c	145			145	-42	-42	-42	-42
N. Casperson	58	0	35	12c	32			32	-45	-45	-9	-9
Criddle & Sons	63	0	63	11c	63			63	0	0	0	0
R. Davis	40	0	40	7c	13		132	145	-67	+263	-67	+263
Egan	79	0	79	14c	32		256	288	-59	+265	-59	+265
Cottonwood	88	0	88	18c	30			30	-66	-66	-66	-66
A. Evans	50	0	50	9c	26			26	-48	-48	-48	-48
W. Furiman	6	0	6	1c	1		13	14	-83	+133	-83	+133
D. Hadley	10	0	10	3c	7			7	-30	-30	-30	-30
Hatley Ind.	19	0	19	4c	11			11	-42	-42	-42	-42
G. Jensen	6	0	6	1c	3			3	-50	-50	-50	-50
S. Kent	17	0	17	3c	17		20	37	0	+118	0	+118
Larson	6	0	6	1c	6			6	0	0	0	0
McNee	20	0	20	20c	10		49	59	-50	+195	-50	+195
Marley	12	0	12	3c	12			12	0	0	0	0
P. Morrison	18	0	18	3c	10		35	45	-44	+150	-44	+150
W. T. Evans	40	0	40	8c	40			40	0	0	0	0
Rt. Hand Grazing	132	0	132	26c	87		74	161	-34	+22	-34	+22
Salveson	142	0	142	22c	142			142	0	0	0	0
Servoss Bros.	40	0	40	6c	40			40	0	0	0	0
Thompson	192	0	192	43c	58			58	-70	-70	-70	-70
Tippits	8	0	8	1c	8			8	0	0	0	0
L. Roberts	15	0	15	3c	14			14	-7	-7	-7	-7
TOTAL	82,462	3,453	65,149	38,331c;122h;32,057s	66,164	3,145	5,925	75,234	-19.8	-8.8	+1.6	+15.5

*All authorized use has been Temporary Non-Renewable.

(32,697 acres) and seasonal use (31,482 acres). The present and proposed grazing systems, *treatments* and seasons of use are shown in Table 2-5. (Detailed grazing system descriptions and the basic management premise of each system are presented in Appendix C.)

Rest Rotation systems include 25,283 acres in one allotment under two-treatment and 132,120 acres in six allotments under three-treatment grazing. The following mitigation would be incorporated into the proposed rest rotation systems:

1. Limit livestock utilization of important mule deer winter forage (bitterbrush and mahogany) to less than 20 percent of the annual shrub growth.
2. Fence selected portions of King Creek to improve water quality and enhance streambank condition.

The deferred rotation proposal calls for 169,982 acres in 12 allotments under two-treatment and 27,960 acres in four allotments under three-treatment grazing. The following mitigations would be incorporated into the proposed deferred rotation grazing systems:

1. Exclude livestock grazing prior to May 16 on mule deer summer ranges.
2. Limit livestock utilization of important mule deer winter forage to less than 20 percent of the annual shrub growth.
3. Install big game guzzlers on Hanzel Mountain to alleviate deer competition on livestock water haul areas.

The proposal to develop deferred grazing systems includes one 21,758-acre one-treatment area and 10,939 acres in three allotments under two-treatment grazing. The following mitigations would be incorporated into the deferred grazing systems:

1. Terminate livestock grazing of mule deer winter ranges after October 1, in the one-treatment areas.
2. Exclude livestock grazing prior to May 16 on mule deer summer ranges.
3. Limit livestock utilization of important mule deer winter forage to less than 20 percent of the annual shrub growth.
4. Fence selected portions of streams, if necessary, to protect water quality and streambank cover.

Seasonal use is the system proposed for 60 allotments encompassing 31,482 acres. The following mitigations would be incorporated into the seasonal use system:

1. Limit livestock utilization of important mule deer winter forage to less than 20 percent of the annual shrub growth.
2. Fence selected portions of Stockton Creek and Moonlight Creek to enhance water quality and improve streambank cover conditions.
3. Fence Wiregrass Reservoir to protect important fishery and waterfowl habitat from livestock overgrazing and trampling.

Under terms of Alternative A, five areas would be used as "relief areas" to accommodate livestock use that has been temporarily suspended from another allotment because of fire, drought or some other disaster. The unallotted areas designated as relief areas encompass 5,732 acres of public land and now provide vegetation for wildlife use and watershed cover.

Table 2-5

Present and Proposed Grazing Management

Allotment	Acres	Systems* (Treatments) Present	Systems* (Treatments) Proposed	Season of Use Present	Season of Use Proposed	Net Change In Turnout Date Days
Houtz Canyon	2,967	SU	DR (3)	5-1 to 8-31	5-16 to 8-31	+15
Side Canyon	120	SU	SU	5-1 to 8-31	5-1 to 8-31	0
Cold Water	152	SU	SU	4-1 to 5-31	4-1 to 5-31	0
Register Rock	80	SU	SU	7-20 to 8-30	7-20 to 8-30	0
Rock Creek	400	SU	SU	3-1 to 5-31	3-1 to 5-31	0
				11-1 to 1-15	11-1 to 1-15	0
Curlew	47,510	RR (3)	RR (3)	4-16 to 6-19	4-16 to 6-19	0
				10-1 to 12-15	10-1 to 10-15	0
	57,930	SU	DR (2)	6-20 to 9-30	6-20 to 9-30	0
	9,055	DR (3)	DR (3)	6-20 to 9-30	6-20 to 9-30	0
	21,758	DG (1)	DG (1)	6-20 to 9-30	6-20 to 10-1	0
	2,820	SU	DG (2)	6-20 to 9-30	6-20 to 9-30	0
South Stone	11,962	RR (3)	RR (3)	5-1 to 6-15	5-1 to 6-25	0
South Bull	4,938	SU	DR (3)	5-1 to 8-15	5-16 to 8-15	+15
Pleasantview	59,026	RR (3)	RR (3)	5-1 to 9-15	5-15 to 9-14	+14
				9-16 to 10-15	9-15 to 10-14	+10
Samaria	25,283	RR (2)	RR (2)	6-16 to 8-31	6-26 to 8-31	0
Walker	552	SU	SU	5-15 to 8-24	5-15 to 8-24	0
Madsen**		SU	SU	5-1 to 6-30	5-1 to 6-30	0
Hanzel Mountian	12,313	SU	DR (2)	4-21 to 11-30	4-21 to 11-30	0
Big Onion	7,050	DG (2)	RR (3)	5-20 to 9-19	5-20 to 9-19	0
Cedar Mountain	2,001	SU	SU	4-20 to 5-19	4-20 to 9-19	0
Dairy Creek	3,320	SU	DR (2)	5-16 to 9-15	5-16 to 9-15	0
East Daniels	120	SU	SU	5-1 to 10-15	5-16 to 10-15	+15
Deep Creek	161	SU	SU	5-16 to 9-16	5-16 to 9-15	0
East Fork	7,360	SU	DR (2)	6-1 to 9-30	6-1 to 9-30	0
Roy Arbon	46,056	SU	DR (2)	5-1 to 10-15	5-16 to 10-15	+15
Indian Springs	10,407	SU	DR (2)	5-21 to 10-15	6-16 to 9-30	+26
Black Rock	11,141	SU	DR (2)	5-1 to 6-20	5-1 to 6-20	0
Michaud Creek	4,215	SU	DR (2)	4-1 to 10-30	4-16 to 10-30	+15
2 1/2 Mile	2,618	SU	SU	5-1 to 10-31	5-1 to 10-31	0
Moonlight Mine	2,223	SU	SU	5-1 to 6-3	5-16 to 6-3	+15
Rapid Creek	3,051	SU	DR (2)	4-16 to 8-31	4-16 to 8-31	0
Inkom	5,511	DR (2)	DR (2)	5-16 to 8-31	5-16 to 8-31	0
Stanger	548	SU	SU	6-1 to 8-31	6-1 to 8-31	0
Shoestring	2,281	RR (3)	RR (3)	5-1 to 10-15	5-1 to 10-15	0
Bullock	195	SU	SU	5-1 to 5-24	5-1 to 5-24	0
Goodenough	23	SU	SU	5-25 to 6-25	5-25 to 6-25	0
McCammon	3,248	SU	SU	5-1 to 11-30	5-16 to 11-30	+15
Price	265	SU	SU	5-1 to 9-30	5-1 to 9-30	0
Toponce	4,291	SU	RR (3)	5-21 to 10-20	5-31 to 10-20	0
Hebdon	791	SU	SU	5-11 to 6-1	5-16 to 6-1	+5
Taylor	411	SU	SU	9-8 to 9-20	9-8 to 9-20	0
Bancroft	11,000	DR (3)	DR (3)	5-16 to 9-30	6-1 to 9-30	+16
Wistisen	215	SU	SU	10-1 to 10-31	10-1 to 10-31	0
Fish Creek	2,550	SU	DG (2)	5-16 to 10-31	5-16 to 10-31	0
Rowsell	40	SU	SU	5-16 to 10-15	5-16 to 10-15	0
Lund	5,569	SU	DG (2)	5-16 to 6-30	5-16 to 6-30	0
				9-21 to 10-20	9-21 to 10-20	0
Crystal	5,240	SU	DR (2)	5-16 to 10-15	5-16 to 10-15	0
Swim Ind.	281	SU	SU	5-1 to 6-30	5-1 to 6-30	0
Tate Ind.	80	SU	SU	5-10 to 9-30	5-10 to 9-30	0
Myler	120	SU	SU	5-1 to 9-15	5-16 to 9-15	+15
Garden Creek	357	SU	SU	6-16 to 10-15	6-16 to 10-15	0
Stewart Ind.	988	SU	SU	6-1 to 8-31	6-1 to 8-31	0
Soloago	3,438	SU	DR (2)	6-1 to 8-23	6-1 to 8-23	0
Rogers Ind.	812	SU	SU	5-25 to 6-3	5-25 to 6-3	0
Hatley	229	SU	SU	5-1 to 9-30	5-16 to 9-30	+15
Preslar Ind.	40	SU	SU	4-1 to 9-30	5-16 to 9-30	+45
Rocks	499	SU	SU	4-16 to 6-6	4-16 to 6-6	0
Johnson	1,114	SU	SU	4-16 to 9-30	5-16 to 9-30	+30
Anderson	2,360	SU	SU	4-20 to 9-30	5-16 to 9-30	+26
Howe	80	SU	SU	5-1 to 5-31	5-1 to 5-31	0
L. Allen	520	SU	SU	5-16 to 9-15	5-16 to 9-15	0
B. Almond	53	SU	SU	5-1 to 10-15	5-1 to 10-15	0
T. Bloxham	80	SU	SU	4-16 to 9-30	4-16 to 9-30	0
A. Brady	40	SU	SU	4-16 to 9-30	4-16 to 9-30	0
C. Criddle	40	SU	SU	4-16 to 9-30	4-16 to 9-30	0
Cambridge	1,507	SU	SU	5-1 to 9-30	5-16 to 9-30	+15
N. Casperson	440	SU	SU	5-1 to 9-30	5-16 to 9-30	+15
Criddle & Sons	564	SU	SU	4-16 to 9-30	4-16 to 9-30	0
R. Davis	340	SU	SU	4-16 to 9-30	4-16 to 9-30	0
Egan	635	SU	SU	4-16 to 9-30	4-16 to 9-30	0
Cottonwood	920	SU	SU	5-16 to 9-30	5-16 to 9-30	0
A. Evans	200	SU	SU	4-16 to 9-30	4-16 to 9-30	0
W. Fuhriman	40	SU	SU	4-16 to 9-30	4-16 to 9-50	0
D. Hadley	80	SU	SU	5-16 to 9-30	5-16 to 9-15	0
Hatley Ind.	114	SU	SU	5-1 to 9-30	5-16 to 9-30	+15
G. Jensen	33	SU	SU	5-1 to 9-30	5-1 to 9-30	0
S. Kent	95	SU	SU	4-16 to 9-30	4-16 to 9-30	0
Larson	40	SU	SU	5-16 to 10-31	5-16 to 10-31	0
McNee	160	SU	SU	5-1 to 5-31	5-1 to 5-31	0
Marley	254	SU	SU	6-1 to 9-30	6-1 to 9-30	0
P. Morrison	120	SU	SU	4-16 to 9-30	4-16 to 9-30	0
W. T. Evans	240	SU	SU	5-1 to 9-30	5-1 to 9-30	0
Rt. Hand Grazing	600	SU	SU	5-1 to 9-30	5-1 to 9-30	0
Salverson	1,519	SU	SU	4-16 to 10-30	5-16 to 10-30	+30
Servoss Bros.	200	SU	SU	4-16 to 10-31	4-16 to 10-31	0
Thompson	1,340	SU	SU	5-16 to 9-30	5-16 to 9-30	0
Tippits	65	SU	SU	4-16 to 9-30	4-16 to 9-30	0
L. Roberts	120	SU	SU	4-16 to 9-30	4-16 to 9-30	0
UNALLOTTED						
Trayis	1,199			As Needed	As Needed	0
Etcheverry	1,693			As Needed	As Needed	0
Downey Watershed	1,200			As Needed	As Needed	0
Table Mountain	1,040			As Needed	As Needed	0
Cedar Ridge	600			As Needed	As Needed	0

Summary.

System	Present Acres	Proposed Acres
Rest Rotation	146,062	157,403
Deferred Rotation	25,566	197,942
Deferred Grazing	25,808	32,697
Seasonal Use	219,088	31,482
Unallotted	5,732	5,732
TOTAL	425,256***	425,256***

Number of Days Delay In Spring Turnout	Acres	% of Total Acres
No Change	247,539	58
5 to 15	151,277	36
16 to 25	11,000	2
26 to 35	15,400	4
36 to 45	40	0
TOTAL	425,256***	100

*SU = Seasonal Use RR = Rest Rotation DR = Deferred Rotation DG = Deferred Grazing

**This is a small area of use, within the boundary of the Samaria Allotment, adjacent to private land, that has natural barriers separating it from the main Samaria Allotment.

***Does not include acreage in isolated parcels.

In addition, there are 6,252 acres of isolated parcels of public land in the EIS area that do not have authorized livestock use at the present time. It is proposed to monitor these parcels where access allows and to curb livestock trespass by working with owners of adjacent land.

The licensing procedure and other operational details would remain unchanged. BLM issues permits/leases in accordance with the grazing regulations (43 CFR 4130) for livestock on each allotment within the framework of the grazing system. Each operator's permit/lease specifies the authorized grazing allotment, livestock numbers and class, season of use, percent of public land use, and AUMs of forage to which the operator is entitled. An annual preference statement and billing is issued prior to grazing to reflect that particular year's use. BLM employees make routine allotment inspections to ensure that livestock numbers and time of grazing for each allotment pasture comply with that authorized. In accordance with 43 CFR 4110.3, grazing privileges can be reduced in whole or in part when the range is depleted from drought or other causes, or when the authorized use exceeds the amount of forage available, or when the objectives of a land-use plan cannot otherwise be achieved.

To monitor the success of grazing systems, field studies are conducted. Range studies focus on actual use, utilization, trend and collection of climatic data on an allotment basis. Records are kept on the actual grazing use made by livestock. Such information is collected by BLM personnel as part of their regular range supervision duties, administrative billings, and livestock marking programs. In addition, livestock operators are asked to provide BLM with their actual use figures when such data is needed for studies or planning purposes.

Utilization studies identify the amount of forage utilized by all herbivores, and trend studies measure the degree and rate of changes in vegetation condition. Such studies are important in determining whether livestock rates should be adjusted and in identifying livestock distribution problems. Likewise, climatological studies provide data important to the effective operation of grazing systems.

Under the Proposed Action, several established techniques would continue to be used to monitor the condition and trend of wildlife habitat in the EIS area. Mule deer winter range browse studies would be conducted each spring. Information obtained would include the condition, utilization, and shrub age and form class of deer winter range browse. Forage utilization in sage grouse habitat would be monitored by using the key forage plant method in meadow areas and by determining shrub age and form class in known nesting/brood-rearing areas. Aquatic habitat would be monitored periodically using the BLM's Idaho State Office "Stream Habitat Condition Evaluation Form."

For the proposed grazing systems, livestock use would be controlled by fences, by natural barriers, by herding, and by limiting available water. Water would be limited by shutting off wells or pipelines. Within allotments grazing operators would move livestock from pasture to pasture by allowing natural drifting and by herding within time frames prescribed for each grazing treatment. BLM Burley District personnel would ensure compliance with each grazing system and would monitor impacts of the system.

Requests for conversions in class of livestock (changes from cattle to sheep, etc.), livestock trespass and livestock crossing permits would be handled under existing regulations.

Effects of grazing systems on water quality, yields, sediment production and infiltration would be monitored. Stream flow and storm runoffs would be measured periodically to determine whether water yields were being affected by the Proposed Action. Periodic grab samples to check possible water quality changes in streams, springs and reservoirs would be conducted. Bacteriological quality could be an intregal part of water quality monitoring.

RANGE DEVELOPMENT

The proposed range developments are needed to implement existing and new Allotment Management Plans (AMPs), achieve better distribution of livestock and increase livestock production, improve watershed condition and improve the condition of areas for wildlife use. Map 2-2 shows the location of all proposed developments. Table 2-6 shows the range development cost schedule with anticipated annual maintenance costs.

The expected 5,925-AUM increase in livestock forage resulting from land treatments is based on previous experience with similar treatments in similar conditions within the EIS area. (For a discussion of methodology used in making production projections, see Appendix B.)

Maintenance of the developments would be the responsibility of BLM and/or the range user in accordance with existing or future project agreements. Fences and cattleguards would be inspected at least every five years; reservoirs, every three years; troughs, catchments and pipelines, annually. Pipelines would be drained each fall. The spraying, chaining and seeding, and burning and seeding would be checked the first two growing seasons following treatment to determine success or failure, and every five years thereafter.

In accordance with the National Historic Preservation Act (1966) and BLM policy, historic and cultural values need to be taken into consideration in any grazing management program. Appropriate guidelines for such consideration are spelled out in a Draft Memorandum of Agreement (1979) involving the Department of the Interior, BLM, the Advisory Council on Historic Preservation and the National Conference of State Historic Preservation Officers.

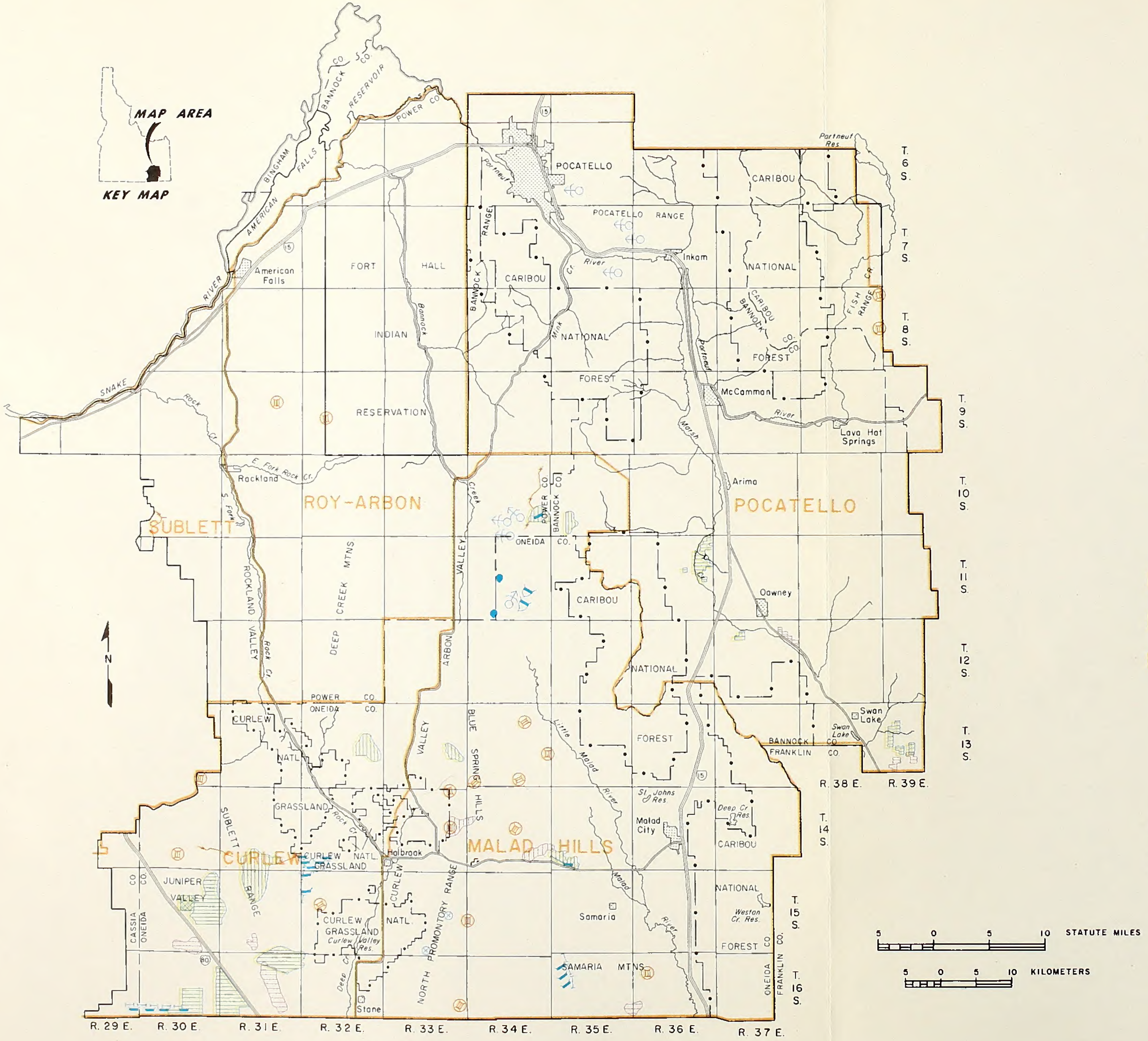
Whether or not that memorandum is approved in its final form, the BLM Burley District would conduct intensive Class III cultural resource inventories prior to initiation of land treatments and construction of range developments. If significant material should be found during these inventories, the facility would be relocated to avoid impact to the resource. If relocation proved unfeasible, appropriate mitigation would be developed in consultation with the State Historic Preservation Officer and the Advisory Council on Historic Preservation. To provide for consideration of cultural resources not evident during intensive inventories, it would be stipulated for each construction project that if cultural values were suspected during work operations, the BLM Burley District Manager would be contacted to determine the action necessary for protection or salvage of these cultural materials.

In order to minimize environmental impacts to the soil and to vegetation due to wet weather conditions, construction of range developments would be limited to the period April 1 to November 30. During this period, construction would be curtailed when excessively wet soil conditions prevailed.

In compliance with the Burley District Supplement for BLM Manual 1791 (Environmental Assessment), visual contrast ratings would be applied in the planning stages to all proposed land management activities that might disturb the soil, change or remove vegetation or place a structure in the landscape. This mitigative measure would ensure that visual management guidelines were met.

MAP 2–2

PROPOSED RANGE DEVELOPMENTS



PLANNING UNITS

CATCHMENT

SPRING

PIPELINE

RESERVOIR

TROUGH

FENCE

CATTLEGUARD

GUZZLER

LAND TREATMENT

▥ CHEMICAL SPRAY

▤ CHAIN AND AERIAL SEED

▩ BURN AND DRILL SEED

ADDITIONAL TREATMENTS TO BE INCLUDED UNDER ALTERNATIVE "B"

▥ CHEMICAL SPRAY

▤ CHAIN AND AERIAL SEED

Table 2-6

Alternative A -

Proposed Range Developments and Land Treatments

	Developments		Estimated Development Cost		Estimated Yearly Maintenance Cost		Acres Disturbed			Expected AUM Increase	
Allotment	Total Units	Type*	Per Unit	Total	Per Unit	Total	Per Unit	Total	Year Completed	Livestock	Wildlife
Houtz Canyon	2 mi.	F	$ 2,500	$ 5,000	$ 60	$ 120	1.20	2.40	1983		
Curlew	3	CG	3,000	9,000	83	249	.01	.03	1984		
	11	T	550	6,050	25	275	.01	.11	1982		
	6 mi.	F	2,500	15,000	60	360	1.20	7.20	1983		
	10.5 mi.	PL	6,000	63,000	250	2,625	1.50	15.75	1982		
	3,120 ac.	SP	10	31,200	.80	2,496	1.00	3,120.00	1982	263	71
	11,980 ac.	CA	15	179,700	1.19	14,256	1.00	11,980.00	1981	4,380	1,125
	600 ac.	BD	10	6,000	.77	462	1.00	600.00	1982	218	
South Bull	1,306 ac.	SP	10	13,060	.80	1,044	1.00	1,306.00	1982	175	39
Pleasantview	7	CG	3,000	21,000	83	581	.01	.07	1984		
	1	T	550	550	25	25	.01	.01	1983		
	2 mi.	PL	6,000	12,000	250	500	1.50	3.00	1982		
	1,020 ac.	SP	10	10,200	.80	816	1.00	1,020.00	1982	123	26
Samaria	1	CG	3,000	3,000	83	83	.01	.01	1984		
	3	T	550	1,650	25	75	.01	.03	1983		
	2 mi.	PL	6,000	12,000	250	500	1.50	3.00	1982		
Hanzel Mtn.	2	CG	3,000	6,000	83	166	.01	.02	1984		
	2	G	4,000	8,000	100	200	.25	.5	1983		
Big Onion	3	SD	2,800	8,400	33	99	.35	1.05	1983		
	1	T	550	550	25	25	.01	.01	1983		
	6 mi.	F	2,500	15,000	60	360	1.20	7.20	1983		
	1 mi.	PL	6,000	6,000	250	250	1.50	1.50	1983		
	1,240 ac.	SP	10	12,400	.80	992	1.00	1,240.00	1982	155	39
Dairy Creek	1	SD	2,800	2,800	33	33	.35	.35	1983		
	2	C	24,000	48,000	383	766	.50	1.00	1983		
	2	R	7,000	14,000	500	1,000	1.25	2.50	1983		
Indian Sp.	2	CG	3,000	6,000	83	166	.01	.02	1984		
Black Rock	3	SD	2,800	8,400	33	99	.35	1.05	1983		
Inkom	1	SD	2,800	2,800	33	33	.35	.35	1983		
Bancroft	2	CG	3,000	6,000	83	166	.01	.02	1984		
Toponce	1.1 mi.	F	2,500	2,750	60	66	1.20	1.32	1983		
Moonlight Mine	0.55 mi.	F	2,500	1,375	60	33	1.20	.66	1983		
Cottonwood	1.1 mi.	F	2,500	2,750	60	66	1.20	1.32	1983		
T. Bloxham	70 ac.	CA	15	1,050	1.19	83	1.00	70.00	1981	32	
R. Davis	300 ac.	CA	15	4,500	1.19	357	1.00	300.00	1981	132	
Egan	600 ac.	CA	15	9,000	1.19	714	1.00	600.00	1981	256	
W. Fuhriman	30 ac.	CA	15	450	1.19	36	1.00	30.00	1981	13	
S. Kent	40 ac.	CA	15	600	1.19	48	1.00	40.00	1981	20	
McNee	120 ac.	CA	15	1,800	1.19	143	1.00	120.00	1981	49	
P. Morrison	100 ac.	CA	15	1,500	1.19	119	1.00	100.00	1981	35	
	1 mi.	F	2,500	2,500	60	60	1.20	1.20	1983		
Rt. Hand Graz. Assoc.	200 ac.	CA	15	3,000	1.19	238	1.00	200.00	1981	74	

TOTALS BY PROJECT TYPE

Water Trough	16	T		8,800		400		.16			
Spring Development[1]	8	SD		22,400		264		2.80			
Catchment[1]	2	C		48,000		766		1.00			
Reservoir[1]	2	R		14,000		1,000		2.50			
Guzzler	2	G		8,000		200		.5			
Pipeline	15.5 mi.	PL		93,000		3,875		23.25			
Fence	17.75 mi.	F		44,375		1,065		21.3			
Cattleguard	17	CG		51,000		1,411		.17			
Chemical Spray	6,686 ac.	SP		66,860		5,348		6,686.00		716	175
Chaining and Aerial Seeding	13,440 ac.	CA		201,600		15,994		13,440.00		4,991	1,125
Burning and Drill Seeding	600 ac.	BD		6,000		462		600.00		218	0
TOTALS				$564,035		$30,785		20,777.68		5,925	1,300

*T = Water Trough SD = Spring Development C = Catchment R = Reservoir PL = Pipeline F = Fence G = Guzzler CG = Cattleguard SP = Chemical Spray CA = Chaining and Aerial Seeding BD = Burning and Drill Seeding

[1] Includes costs for water trough installation.

Access to the site of proposed range developments would generally not require construction of any bladed roads. In roadless areas of gentle to moderate terrain, vehicle access would be cross-country, thus creating non-maintained trails. The trails would be used for access during construction, during routine maintenance inspections and during any required maintenance work. Once created, these trails would not receive frequent enough use by BLM to keep them active. In areas of rough terrain, some road construction might be required. These bladed roads would not receive regular maintenance and would not be placed on the district's transportation plan. Road construction would be regulated by the Wilderness Study criteria and by ORV classification.

Structural Improvements

As a part of the Proposed Action, 16 troughs would be required to meet identified needs of livestock and wildlife and to facilitate implementation of grazing systems. The metal trough design that would be used is locally made to BLM Burley District specifications, measuring 10 feet long, 21 inches high and 4 feet wide. Although not of these specific dimensions, the "jet engine cover" trough would be acceptable if buried to an extent allowing no more than 21 inches in above-ground height. The 21-inch height permits mule deer and antelope fawns to water. All troughs would be set on treated timbers such as railroad ties, which are set on a firm earthen base. Where necessary, partially buried wood posts would be used to steady the trough. Adjacent posts would be secured by four-inch thick lumber across the top of the trough. Erosion protection methods for the immediate area around each trough would include a gravel or larger rock pad, material out of talus slopes, or old tires filled with dirt.

Small animal escape ramps would be installed on each trough used. Troughs would be painted a non-reflective, neutral color such as rust or gray to blend with surrounding vegetation and soil coloration. As an additional mitigative measure, troughs would not be located on the skyline or in the immediate foreground visible (up to one half mile, dependent on topography) from major roads.

Eight spring developments are proposed.

A round concrete or metal culvert would be placed below the spring as the collection point or head box. Four-inch perforated pipe would be placed in a trench and covered with three to six inches of washed gravel. Straw would be placed on top of the gravel to reduce infiltration of dirt into the collection pipe.

Water would be piped away from the headbox, via 1 1/4- or 2-inch pipe, buried 20-36 inches deep depending on the soil type, to a watering trough. Float valves would be included on each trough to prevent overflow and preserve water. Small animal escape ramps would be installed on the trough. An area 400 feet square surrounding the spring head would be fenced with four-strand barbed wire to prevent livestock from trampling and compacting wet soil and to protect wildlife food and cover.

Construction of these spring developments would entail some excavation work with a tractor-mounted backhoe for developing the water collection system and for burying plastic pipe.

Visual impacts to the vegetation near the spring would be limited by diverting only a portion of the spring flow.

Two rainfall catchments would be constructed to provide livestock and wildlife water. Catchments would consist of a collection area made from an impervious material designed to collect snow and rainfall, a storage facility or reservoir below, and pipeline to one or two stock watering troughs.

The size of the collection area and the storage facility would be determined by annual average precipitation, location and water requirements. For example, a 100- by 100-foot square collection area receiving nine inches of annual precipitation would yield 40,000 to 50,000 gallons of water per year. Each job would be designed for the needs of the specific site. In site choice, such factors as slope, soil type and accumulation of winter snowpack would be considered. Provision for gravity water flow from the storage reservoir to water troughs is critical. A fence enclosing one to three acres would be constructed around the water collection area to exclude livestock and big game.

The water collection or catchment area would be constructed of 16-guage, corrugated, galvanized tin of a non-reflective color that blends with the natural surroundings. It would be nailed in place on a framework of two-by-four lumber that is held in place with posts buried in the ground. Catchment site clearing would involve stripping vegetation from under the catchment surface and then applying a herbicidal sterilant to the ground area to be covered by the corrugated tin.

Water would be stored in a reservoir excavated by a tractor-mounted backhoe. The storage reservoir would be lined with heavy butyl rubber or be packed with bentonite clay as a sealant. Approximate storage capacity would provide for 4,166 cow days of use at a rate of 12 gallons per cow day.

Soil excavated from the reservoir would be used to dike the collection area. All excavation material would be reshaped to conform to contours of the natural terrain. Disturbed areas would be seeded to stablize the soil.

Plastic pipe 1 1/2-2 inches in diameter would run 50-300 feet from the reservoir to a water trough located outside the fenced area. The pipe would be buried 20-30 inches in a trench constructed by backhoe. Water troughs would be the same in style and size as those described earlier. Within the fenced area, along the run of pipe, a water hole would be provided for small mammals and game and non-game birds.

Construction equipment would reach the proposed catchment sites via existing roads.

Alternative A also proposes two big game water guzzlers, which would be installed on Hanzel Mountain to alleviate the conflict with livestock for water at existing water haul sites. These guzzlers would be designed for the sole use of wildlife (primarily mule deer) and fenced in such a way as to exclude livestock. The guzzlers would be located so as not to adversely affect the suitability of the area for possible designation as wilderness. A 1,500-gallon steel tank would be buried, and a 200-square-foot apron constructed of fiberglass roofing on a wooden frame would provide ample water. The drinking trough would be located at ground level, downhill from the storage tank.

Under the Proposed Action, two pit-type reservoirs would be constructed in intermittent drainages to impound water.

Construction would consist of excavating a core trench, laying steel pipe through the dam axis, and using earthen material from the reservoir area to construct a dam across the drainage. The reservoir would be sealed with bentonite clay. Each reservoir would receive professional engineering design, and construction would be performed with the most suitable equipment for the job.

The reservoirs would vary in size from one-third to one surface acre and would be two to ten feet in depth.

Each of the reservoirs would be fenced to exclude livestock but not wildlife. Fencing would be placed a maximum of 200 feet back from the normal high water line and dam, as terrain allows. During constructon, pipe would be placed under the dam. The pipe through the dam axis would allow water from the reservoir to be drawn off and piped to livestock watering troughs located outside the fenced area.

All excavation material not used in construction of the reservoir would be bladed to conform to the natural topography. All areas of bare soil would be seeded for soil stabilization.

Pipelines totaling 15.5 miles would be developed under the Proposed Action. The proposed lines would be hooked onto existing pipeline systems. Pipelines would carry water from a central water source to areas where water is not now available for livestock or wildlife.

Two-inch diameter plastic pipe would be used in each system. Pipelines would be installed with a ripper tooth mounted on a track type tractor so that trenching and pipe laying could be accomplished in a single operation.

The ripper tooth or pipe laying attachment consists of a backward, four-inch wide, L-shaped tooth. Steel pipe three to four inches in diameter is attached to the backside of the ripper tooth, serving as a guide through which the plastic pipe is fed underground into the trench prepared by the ripper tooth. A pipe roll holder is mounted on the tractor, and pipe from the roll is threaded through the pipe guide on the ripper tooth.

The proposed plastic pipe would normally be laid 20-36 inches underground, depending on soil conditions. Pre-ripping one to two times would probably be required to get the proper depth and prepare the pipe bed. As the tractor moved forward, the earth would settle back around the pipe, leaving a visible ridge of approximately 12-16 inches, with vegetation disturbed along the pipeline route in a two- to four-foot swath.

In brushy country the pipeline route must be cleared prior to the pipe laying operation, since brush often "balls" up in front of the ripper tooth. Brush would be cleared at ground level with a blade mounted on the front of a cat-type tractor. It would also be necessary to remove an occasional tree or group of trees that could not be bypassed. After the pipe was buried, the line would be water barred, if necessary, and seeded in the fall with grass and shrub species existing along the pipeline route. Wherever possible, pipelines would be laid in or adjacent to existing roads or trails. To the extent possible, pipelines would be placed along, rather than across, land contours.

Water troughs would be placed along the pipeline route at approximately 3/4-mile intervals. Each trough would be equipped with a float valve to prevent waste while maintaining a full water level. Water would be provided in these pipeline systems for wildlife use during the period of April through October. In addition, bird watering guzzlers would be placed along all pipelines in the Curlew Allotment. These guzzlers would be fenced to exclude livestock.

If specific nest sites were identified, construction work on the proposed pipeline in Black Pine Valley would not be conducted between March 20 and June 15 because of possisble disturbance to the nesting ferruginous hawk, a "sensitive" species in Idaho.

Fourteen miles of fencing are proposed to facilitate implementation of grazing systems and another 3.75 miles to preserve fishery habitat. All 17.75 miles of proposed fencing would be constructed to BLM Burley District specifications for four-strand barbed wire fence. Spacing of all wires would be as follows: bottom or fourth wire 16 inches above ground; third wire 6 inches above the fourth; second wire 8 inches above the third; top wire 12 inches above the second. This spacing provides a ground to top wire height of 42 inches and assures a barrier easily negotiated by deer.

Setting of the fence and brace posts, stretching the wire and survey work would require off-road vehicle travel, probably four to ten trips along the fence line.

Unless creating a safety problem, non-reflective steel posts of a color compatible with the surrounding landscape would be used in constructing fences so that the posts would blend into the landscape. Wooden posts would be used on corners, gates and stretch panels. Where fences cross existing roads, cattleguards would be installed. Gates would be located at least every half mile and in corners as needed. Hand clearing of fence lines would be practiced except in areas of thick brush, where a blade mounted on front of a cat-type tractor would be used.

Cattleguards would be located at 17 sites where roads are crossed by fences. These would be eight feet wide and 12-24 feet in length, the size depending upon the traffic type and pattern.

Cattleguard construction would require excavating a hole approximately two feet deep and slightly larger than the cattleguard base. A precast concrete base would be set into the excavation. The soil would be backfilled and compacted around the concrete, leaving a hole in the middle.

Any soil not used for back fill would be reshaped to conform to surrounding natural contours. A metal grid with openings large enough to deter animals from walking across, but close enough to allow vehicles to drive over, would be set onto the concrete base. The grid would be held in place by its own weight or by bolts. A gate would be placed on one or both sides of the cattleguard to allow for livestock passage. Cattleguard color would need to meet safety standards and at the same time, where feasible, be compatible with the surrounding landscape.

Land Treatments

A total of 6,686 acres principally of big sagebrush in the Curlew, South Bull, Big Onion and Pleasantview Allotments are recommended for spraying with the herbicide 2,4-D.

The method of foliar application would be aerial spraying by helicopter. For most effective sagebrush control, the herbicide would be applied to foliage after leaves and shoots have developed but before the leaf cuticle has thickened. This is the stage of plant growth when carbohydrate reserves are being replenished and when the brush would be most affected by the herbicide.

The areas proposed for treatment are too rough for mechanical control methods such as railing or rotobeating. Fire was also excluded as a brush control method in these areas because it would consume plant litter important for watershed protection.

The expected forage increase from the spraying is 716 AUMs. This figure was determined by analyzing the 1977-78 vegetative inventory for each area to be treated to determine the current carrying capacity in acres per AUM. This capacity was then divided into the total acres to be treated to determine current capacity of the area to be treated. Mueggler and Blaisdell, in an article titled "Effects on Associated Species of Burning, Rotobeating, Spraying and Railing Sagebrush" (1958), found that grass production increased an average of 75 percent over a three-year period after control was implemented on sagebrush in Idaho on the Snake River Plain. Since the areas proposed for treatment are adajcent to the Snake River Plain, the current capacity of the areas to be treated was multiplied by 75 percent to determine the expected AUM increase due to treatment. District resource specialists believe this is a conservative estimate.

Chemical control of sagebrush would reduce brush composition of the vegetative type, release moisture and create space and light, giving the grass species a chance to gain vigor and increase in density. The result would be increased grass composition for the vegetative type. Although converted sagebrush stands would eventually return to the original brush cover, proper stocking rates and good livestock husbandry would slow the process.

Sprayed areas would be irregular in shape to simulate natural vegetative patterns. An irregular buffer strip would be left adjacent to any major road. Such a buffer would be several hundred feet wide in some areas and very narrow in others, thus creating a more natural appearance than would a uniform strip.

Spraying would not be conducted within 100 yards of live or intermittent streams, meadows or standing water. Should nesting, brood-rearing and winter sage grouse habitat be identified in the treatment area, at least 20 percent live sagebrush cover would be maintained there. Complete kill of sagebrush within a treatment area would be avoided, and sufficient natural cover areas would be maintained to permit efficient deer utilization.

Chaining and aerial seeding is proposed for 13,440 acres of juniper and sagebrush in the EIS area. Brush would be removed by ship's anchor chain. The treatment area would then be aerial seeded to provide an additional 4,991 AUMs of livestock forage.

According to a 1977 vegetative inventory, actual use and trend data, all of the allotments proposed for chaining and seeding lack sufficient forage to meet the adjudicated quotas of the range users. Past seeding and *Range Site Descriptions* indicate that this proposal is a viable method of increasing livestock forage.

Each end of the 200-foot chain would be attached to a crawler-type tractor. The tractors would travel parallel paths, pulling the chain in J-shape behind them through the juniper and sagebrush stands, knocking down and uprooting the trees and brush. Two passes with the chain in opposite directions would be made, with seed flown on between the passes.

The chaining pattern would be irregular in shape and size. An irregular buffer strip would be left adjacent to any major road. Not more than 70 percent of sagebrush cover would be removed. Seeding mixture would include succulent forage species for wildlife. Following treatment, livestock would be excluded for up to two growing seasons to ensure germination and establishment of the highly palatable plant species.

The Proposed Action also includes a burning and drill seeding project. Within the Curlew Allotment 600 acres of sagebrush would be burned to increase livestock forage by 218 AUMs. Controlled burning has proved to be an effective and inexpensive method of brush control where adequate fuel is available to carry the fire. It has been used as an effective management tool on adjacent areas of the Forest Service Curlew National Grassland.

Burning is recommended in the Curlew area because the thick stand of sagebrush would carry a fire, but does not have desirable understory vegetation that could also be destroyed by burning. Drill seeding is recommended over aerial seeding because past experience has shown that a better grass stand is assured when the seed is put into the ground rather than being broadcast over the ash.

District fire management personnel would conduct the burn. Fire breaks would be made with motorized equipment and would be water barred to prevent erosion. Seeding of the burn area would be accomplished by pulling a rangeland drill behind a tractor. Because the area is flat it is well suited for drill seeding.

Fire breaks would be seeded to prevent visual scarring and soil erosion. The burn area would be irregular in shape to simulate a natural burn condition. An irregular buffer strip would be left adjacent to any major road. Following treatment, livestock would be excluded for up to two growing seasons to ensure germination and establishment of the highly palatable plant species.

CONSEQUENCES

Based on the information and analysis presented in Chapters 3 and 4, Alternative A would furnish the widest range of beneficial resource opportunities of all alternatives considered for analysis (see Table 2-11).

The level of livestock grazing would increase from the present 65,149 AUMs to 75,234 AUMs by 1995. During the same period, the forage for big game wildlife would rise from 17,954 to 22,165 AUMs. Only Alternative B provides for a higher level of livestock forage, and that alternative would require a decrease in wildlife forage from the existing situation. Only two alternatives provide higher levels of forage for wildlife, and those alternatives would provide no livestock forage (Alternative C) or only a moderate amount (Alternative D).

The vegetative resource would be favorably affected by Alternative A. No other alternative provides a significantly greater improvement in range condition and range trend. The total vegetative biomass would increase by almost 20 million pounds. Although Alternatives B, C and D would provide a greater biomass increase when measured in pounds, the difference is not more than 1 percent.

Despite an adverse impact on ferruginous hawk nesting, wildlife in general would benefit under Alternative A. Alternatives C and D would provide similar benefits except for fisheries habitat, the quality of which both these alternatives would maximize. Alternatives B and E would provide a much less favorable climate for wildlife.

Implementation of Alternative A would eventually result in decreased potential erosion rates on 67 percent of the EIS area, while watershed condition on 88 percent of the EIS area near important waters would remain static or improve. Only Alternatives C and D would provide greater benefits for soil and watershed conditions.

Because of the positive aspects of Alternative A toward wildlife, in particular game species, hunter and fisherman days would show a moderate increase. This favorable impact on recreation in the EIS area would be less than that resulting from Alternatives C and D, although much greater than that resulting from Alternatives B and E.

A majority (62 percent) of recorded cultural resource sites would be subjected to increased adverse impacts under Alternative A. There would generally be no impact on wilderness. The naturalness of four out of five Wilderness Inventory Units would not be impaired by increased livestock grazing use.

Alternative A shows positive economic impacts. Of the five alternatives considered, it exhibits the second most favorable economic climate in terms of the individual rancher and overall net *present value*. Only Alternative B shows more favorable economic impacts.

In terms of social conditions, it is unlikely that the ranching way of life would be affected.

ALTERNATIVE B

INCREASED LIVESTOCK USE

Alternative B is designed to facilitate increased livestock use by adding 10,133 AUMs to the current forage capacity through better grazing system management (3,145 AUMs) and an intensified range improvement and land treatment program (6,988 AUMs). A total of 24,296 acres of native vegetation is proposed for land treatment work. This acreage includes 7,536 acres of chemical spray, 16,160 acres of chaining and aerial seeding and 600 acres of controlled burning and drill seeding.

Initial vegetative allocation would be achieved by adjusting livestock numbers, seasons of use or a combination of both over a period of three years, with the last year projected to be the 1983 grazing season. The additonal forage from land tratments would be available by 1985, with that from grazing systems fully available by 1995. This additional forage would be allocated as it became available.

Stocking levels, seasons of use and range developments would be coordinated with the livestock operators. Grazing management systems would be incorporated into Allotment Management Plans (AMPs) developed in cooperation with livestock operators, Idaho Department of Fish and Game, Idaho Department of Public Lands, U. S. Forest Service, Soil Conservation Service and other interested parties, as well as landowners within the allotments.

The objective of this "Increased Livestock Use" alternative is to provide minimum constraints on the livestock industry within the productive capability of the forage resource. As a means of achieving this objective, forage would be provided to satisfy all of the 82,462 AUMs that constitute the active *grazing preference* of livestock operators in the EIS area. This level of forage use is actually 27 percent greater than the five-year (1974-1978) average licensed use level established voluntarily by permittees in the EIS area. Achieving this objective would result in significant direct and secondary income gains for BLM grazing permittees.

VEGETATIVE ALLOCATION

Livestock vegetative allocations proposed under Alternative B are shown in Table 2-7. The allocation includes an initial 72,329 AUMs, the inventoried range capacity, plus an additional 10,133 AUMs that would be available as a

Table 2-7

Alternative B -

Proposed Livestock Forage Allocation

	PRESENT LIVESTOCK GRAZING USE				PROPOSED LIVESTOCK GRAZING USE				PROPOSED LIVESTOCK ADJUSTMENTS (%)			
						Additional AUMs Available From:			From Authorized Use		From 5 Yr. Average	
Allotment	Authorized Livestock AUMs	Suspended Non-Use	5 Yr. Average Licensed Use	Number and Class of Livestock	Short Term Initial Forage Allocation	Grazing Systems	Land Treatments	Long Term Total AUMs Available	Short Term	Long Term	Short Term	Long Term
Houtz Canyon	512	0	512	128c	258	15		273	-50	-47	-50	-47
Table Mountain	0	0	0	- - -	120			120	- -	- -	- -	- -
Cedar Ridge	0	0	0	- - -	75			75	- -	- -	- -	- -
Side Canyon	24*	0	24	24c	10			10	-58	-58	-58	-58
Cold Water	16*	0	16	8c	14			14	-13	-13	-13	-13
Register Rock	2*	0	2	- - - 10h	2			2	0	0	0	0
Rock Creek	24*	0	24	150c	24			24	0	0	0	0
Curlew	25,303	0	22,079	8,026c, 87h, 4,680s	22,796	1,368	5,215	29,379	-10	+16	+3	+33
South Stone	3,820	0	2,487	2,558c	3,084	185	353	3,622	-19	-5	+24	+46
South Bull	582	86	399	166c	581	35	175	791	0	+36	+46	+98
Pleasantview	18,051	0	13,850	4,864c, 2,755s	11,186	210	225	11,621	-38	-36	-19	-16
Samaria	5,471	0	3,716	2,608c, 750s	3,203	62	80	3,345	-41	-39	-14	-10
Walker	150	0	150	44c	68			68	-55	-55	-55	-55
Madsen	44	0	42	36c	26			26	-41	-41	-38	-38
Hanzel Mountain	3,470	0	1,134	502c, 4,800s	3,470	208		3,678	0	+6	+206	+224
Big Onion	1,959	0	1,914	1,464c	1,457	87	155	1,699	-26	-13	-24	-11
Cedar Mountain	100*	0	100	100c	133			133	+33	+33	+33	+33
Dairy Creek	1,014	0	784	264c	780	47		827	-23	-18	-1	+5
East Daniels	14	0	3	50c	14			14	0	0	+367	+367
Deep Creek	39	0	39	24c	20			20	-49	-49	-49	-49
East Fork	1,373	0	1,138	814c, 7h	742	45		787	-46	-43	-35	-31
Roy Arbon	6,141	0	5,434	1,424c, 4,670s	7,559	453		8,012	+23	+30	+39	+47
Indian Springs	1,983	117	1,394	730c	1,226	74		1,300	-38	-34	-12	-7
Black Rock	726	0	693	- - - 2,714s	1,948	44		1,992	+168	+174	+181	+187
Michaud Creek	550	0	526	250c, 10h	712	33		745	+29	+35	+35	+42
2 1/2 Mile	539	0	539	387c, 8h	437			437	-19	-19	-19	-19
Moonlight Mine	200	0	167	- - - 909s	681			681	+241	+241	+308	+308
Rapid Creek	378	125	363	228c	454	23		477	+20	+26	+25	+31
Inkom	756	752	462	746c	851	15		866	+13	+15	+84	+87
Stanger	147	49	147	49c	122			122	-17	-17	-17	-17
Shoestring	222	183	230	24c 134s	589	13		602	+165	+171	+156	+162
Bullock	25	0	25	50c	13			13	-48	-48	-48	-48
Goodenough	26*	0	26	25c	13			13	-50	-50	-50	-50
McCammon	303	174	230	60c, 1,100s	755			755	+149	+149	+228	+228
Price	60	0	48	30c	74			74	+23	+23	+54	+54
Toponce	636	0	648	400c, 900s	1,518	38		1,556	+137	+145	+134	+140
Hebdon	34	0	34	100c	121			121	+256	+256	+256	+256
Taylor	44	0	26	- - - 1,100s	98			98	+123	+123	+277	+277
Bancroft	2,200	497	1,918	423c 1,500s	1,225	25		1,250	-44	-43	-36	-35
Wistisen	32	22	33	111c	54			54	+69	+69	+64	+64
Fish Creek	503	0	255	15c 900s	554	30		584	+10	+16	+117	+129
Rowsell	18	0	6	3c	4			4	-78	-78	-33	-33
Lund	503	0	299	- - - 1,165s	551	30		581	+10	+16	+84	+94
Crystal	1,144	762	868	355c	1,141	69		1,210	0	+6	+31	+39
Swim Ind.	42	0	0	60c	96			96	+129	+129	- -	- -
Tate Ind.	31	0	30	30c	12			12	-61	-61	-60	-60
Myler	18	0	18	16c	25			25	+39	+39	+39	+39
Garden Creek	28	36	28	7c	99			99	+254	+254	+254	+254
Stewart Ind.	150	0	150	50c	209			209	+39	+39	+39	+39
Soloago	606	0	193	- - - 3,230s	700	36		736	+16	+21	+263	+281
Rogers Ind.	51	0	51	- - - 750s	311			311	+510	+510	+510	+510
Hatley	25	0	25	25c	26			26	+4	+4	+4	+4
Preslar Ind.	7	0	4	21c	8			8	+14	+14	+50	+50
Rocks	700	650	419	432c	264			264	-62	-62	-37	-37
Johnson	143	0	57	26c	113			113	-21	-21	+98	+98
Anderson	110	0	0	79c	302			302	+175	+175	- -	- -
Howe	18*	0	18	60c	10			10	-44	-44	-44	-44
L. Allen	52	0	52	13c	120		124	244	+131	+369	+131	+369
B. Almond	9	0	9	2c	8			8	-11	-11	-11	-11
T. Bloxham	10	0	10	2c	2		32	34	-80	+240	-80	+240
A. Brady	6	0	6	1c	1			1	-83	-83	-83	-83
C. Criddle	6	0	6	1c	1			1	-83	-83	-83	-83
Cambridge	251	0	251	50c	215			215	-14	-14	-14	-14
N. Casperson	58	0	35	12c	32			32	-45	-45	-9	-9
Criddle & Sons	63	0	63	11c	107			107	+70	+70	+70	+70
R. Davis	40	0	40	7c	13		132	145	-67	+263	-67	+263
Egan	79	0	79	14c	32		256	288	-59	+265	-59	+265
Cottonwood	88	0	88	18c	30			30	-66	-66	-66	-66
A. Evans	50	0	50	9c	26			26	-48	-48	-48	-48
W. Furiman	6	0	6	1c	1		13	14	-83	+133	-83	+133
D. Hadley	10	0	10	3c	7			7	-30	-30	-30	-30
Hatley Ind.	19	0	19	4c	21			21	+11	+11	+11	+11
G. Jensen	6	0	6	1c	4			4	-33	-33	-33	-33
S. Kent	17	0	17	3c	17		20	37	0	+118	0	+118
Larson	6	0	6	1c	13			13	+117	+117	+117	+117
McNee	20	0	20	20c	10		49	59	-50	+195	-50	+195
Marley	12	0	12	3c	53			53	+342	+342	+342	+342
P. Morrison	18	0	18	3c	10		35	45	-44	+150	-44	+150
W. T. Evans	40	0	40	8c	42		50	92	+5	+130	+5	+130
Rt. Hand Grazing	132	0	132	26c	87		74	161	-34	+22	-34	+22
Salveson	142	0	142	22c	326			326	+130	+130	+130	+130
Servoss Bros.	40	0	40	6c	131			131	+228	+228	+228	+228
Thompson	192	0	192	43c	58			58	-70	-70	-70	-70
Tippits	8	0	8	1c	10			10	+25	+25	+25	+25
L. Roberts	15	0	15	3c	14			14	-7	-7	-7	-7
TOTAL	82,462	3,453	65,149	38,331c;122h;32,057s	72,329	3,145	6,988	82,462	-12.3	0	+11	+26.6

*All authorized use has been Temporary Non-Renewable.

result of grazing systems and land treatments, making a total of 82,462 AUMs available for livestock by 1995. To sum up:

Present Livestock Grazing (AUMs)		Proposed Livestock Grazing (AUMs)				Adjustments (%)			
Authorized Use (Active Class I Preference)	5 Year Aveage Licensed Use (1974-1978)	Initial Forage Allocation	Additional AUMs From: Land Treatments (3-5 years)	Grazing Systems (5-15 years)	Total Available AUMs (After 15 Years)	From Authorized Use		From 5 Year Average	
						Short Term	Long Term	Short Term	Long Term
82,462	65,149	72,329	6,988	3,145	82,462	-12	0	+11	+27

Because some allotments lack the inherent capacity to supply forage enough to meet the full active grazing preference, some grazing use would have to be shifted from those deficient allotments to those with the capability of producing forage in excess of the active grazing preference. Those allotments showing a negative adjustment from the authorized use over the long term (see Table 2-7) would be subject to shifts in use. Any proposed shifts would be coordinated with individual livestock operators and affected grazing associations.

Initially, Alternative B provides 9 percent more livestock AUMs than Alternative A and 10 percent more in the long term. The big game wildlife allocation under Alternative B is 17,758 AUMs, 20 percent less than that proposed for the long term under Alternative A.

Apportionment of the total vegetative biomass among consumptive and non-consumptive uses can be summarized as follows:

	Initial		Long Term	
	Pounds	Percent	Pounds	Percent
Allocation to Livestock	57,863,200	15	65,969,600	16
Allocation to Wildlife	14,206,400	3	14,206,400	3
Allocation to Non-Consumptive Uses (watershed cover, aesthetics)	320,383,158	82	334,148,265	81
Total Vegetation	392,452,758	100	414,324,265	100

GRAZING MANAGEMENT

Grazing systems, treatments and seasons of use would be the same as those proposed under Alternative A (see Table 2-5). However, mitigations included in this component of Alternative A are not included in Alternative B so as not to impose any constraints on livestock use of the range vegetation.

As a result of the proposed grazing systems, an additional 3,145 AUMs would be available for livestock use by 1995.

The operational and monitoring aspects of grazing management would remain the same as in Alternative A, but activity plans for resources other than livestock grazing would be approved only if such plans were compatible with the livestock grazing management program proposed in Alternative B.

RANGE DEVELOPMENT

The range developments proposed in Table 2-8 are needed to increase livestock forage production, implement new and existing Allotment Management Plans and achieve better distribution of livestock. Map 2-2 shows the

Table 2-8

Alternative B

Proposed Livestock Range Developments and Land Treatments

Allotment	Developments Total Units	Developments Type*	Estimated Development Cost Per Unit	Estimated Development Cost Total	Estimated Yearly Maintenance Cost Per Unit	Estimated Yearly Maintenance Cost Total	Acres Disturbed Per Unit	Acres Disturbed Total	Year Completed	Livestock AUM Increase
Houtz Canyon	2 mi.	F	$ 2,500	$ 5,000	$ 60	$ 120	1.20	2.40	1983	
Curlew	3	CG	3,000	9,000	83	249	.01	.03	1984	
	11	T	550	6,050	25	275	.01	.11	1982	
	6 mi.	F	2,500	15,000	60	360	1.20	7.20	1983	
	10.5 mi.	PL	6,000	63,000	250	2,625	1.50	15.75	1982	
	3,120 ac.	SP	10	31,200	80	2,496	1.00	3,120.00	1982	263
	12,950 ac.	CA	15	194,250	1.19	15,410	1.00	12,950.00	1981	4,734
	600 ac.	BD	10	6,000	.77	462	1.00	600.00	1982	218
South Bull	1,306 ac.	SP	10	13,060	.80	1,044	1.00	1,306.00	1982	175
Pleasantview	7	CG	3,000	21,000	83	581	.01	.07	1984	
	1	T	550	550	25	25	.01	.01	1983	
	2 mi.	PL	6,000	12,000	250	500	1.50	3.00	1982	
	1,870 ac.	SP	10	18,700	.80	1,497	1.00	1,870.00	1982	225
Samaria	1	CG	3,000	3,000	83	83	.01	.01	1984	
	3	T	550	1,650	25	75	.01	.03	1983	
	2 mi.	PL	6,000	12,000	250	500	1.50	3.00	1982	
	200 ac.	CA	15	3,000	1.19	238	1.00	200.00	1981	80
Hanzel Mtn.	2	CG	3,000	6,000	83	166	.01	.02	1984	
Big Onion	3	SD	2,800	8,400	33	99	.35	1.05	1983	
	1	T	550	550	25	25	.01	.01	1983	
	6 mi.	F	2,500	15,000	60	360	1.20	7.20	1983	
	1 mi.	PL	6,000	6,000	250	250	1.50	1.50	1983	
	1,240 ac.	SP	10	12,400	.80	992	1.00	1,240.00	1982	155
Dairy Creek	1	SD	2,800	2,800	33	33	.35	.35	1983	
	2	C	24,000	48,000	383	766	.50	1.00	1983	
	2	R	7,000	14,000	500	1,000	1.25	2.50	1983	
Indian Sp.	2	CG	3,000	6,000	83	166	.01	.02	1984	
Black Rock	3	SD	2,800	8,400	33	99	.35	1.05	1983	
Inkom	1	SD	2,800	2,800	33	33	.35	.35	1983	
Bancroft	2	CG	3,000	6,000	83	166	.01	.02	1984	
T. Bloxham	70 ac.	CA	15	1,050	1.19	83	1.00	70.00	1981	32
R. Davis	300 ac.	CA	15	4,500	1.19	357	1.00	300.00	1981	132
Egan	600 ac.	CA	15	9,000	1.19	714	1.00	600.00	1981	256
W. Fuhriman	30 ac.	CA	15	450	1.19	36	1.00	30.00	1981	13
S. Kent	40 ac.	CA	15	600	1.19	48	1.00	40.00	1981	20
McNee	120 ac.	CA	15	1,800	1.19	143	1.00	120.00	1981	49
P. Morrison	100 ac.	CA	15	1,500	1.19	119	1.00	100.00	1981	35
South Stone	970 ac.	CA	15	14,550	1.19	1,154	1.00	970.00	1981	353
L. Allen	430 ac.	CA	15	6,450	1.19	512	1.00	430.00	1981	124
W. T. Evans	150 ac.	CA	15	2,250	1.19	179	1.00	150.00	1981	50
Rt. Hand Graz. Assoc.	200 ac.	CA	15	3,000	1.19	238	1.00	200.00	1981	74

TOTALS BY PROJECT TYPE

	Total Units	Type*	Per Unit	Total	Per Unit	Total	Per Unit	Total	Year Completed	Livestock AUM Increase
Water Trough	16	T		8,800		400		.16		
Spring Development[1]	8	SD		22,400		264		2.80		
Catchment[1]	2	C		48,000		766		1.00		
Reservoir[1]	2	R		14,000		1,000		2.50		
Pipeline	15.5 mi.	PL		93,000		3,875		23.25		
Fence	14.0 mi.	F		35,000		840		16.80		
Cattleguard	17	CG		51,000		1,411		.17		
Chemical Spray	7,536 ac.	SP		75,360		6,029		7,536.00		818
Chaining and Aerial Seeding	16,160 ac.	CA		242,200		19,230		16,160.00		5,952
Burning and Drill Seeding	600 ac.	BD		6,000		462		600.00		218
TOTALS				$595,960		$34,277		24,341.68		6,988

*T = Water Trough SD = Spring Development C = Catchment R = Reservoir PL = Pipeline F = Fence
CG = Cattleguard SP = Chemical Spray CA = Chaining and Aerial Seeding BD = Burning and Drill Seeding

[1] Includes costs for water trough installation.

location of the developments listed in Table 2-8. Existing range improvements and land treatments would continue to be maintained. For a description of the improvements and land treatments, refer to Alternative A.

Based on previous experience with the same land treatments under similar conditions within the EIS area, an expected 6,988-AUM increase in livestock forage would be expected by 1985. The seeded areas would be protected from livestock grazing for two full growing seasons to ensure their establishment and productivity.

With respect to maintenance of the range developments, protection of cultural values and mitigative precautions to be taken during construction, the provisions described in Alternative A also apply under Alternative B.

CONSEQUENCES

Alternative B is oriented toward maximizing livestock production on the public lands. As such, Alternative B would provide the greatest economic benefits to the individual livestock operator over both the short and intermediate term and would have the greatest net present value of all alternatives.

This highly positive economic aspect of Alternative B would not be achieved without severe environmental consequences. Of all Alternatives, B would have the greatest adverse effect on the soil resource and on watershed conditions (see Table 2-11).

The wildlife resource would also suffer. The total big game vegetative allocation would fall 196 AUMs short of the existing forage level. This would result in insufficient forage to satisfy IDFG 1978 mule deer and 1985 antelope population levels. There would be a long-term decline in upland game bird numbers as well as non-game species habitat quality. The decline of fisheries habitat would accelerate. An estimated 20 percent of all ferruginous hawk nests in Black Pine Valley would be abandoned. No other alternative analyzed would have such overall adverse impacts on wildlife.

Alternative B has the greatest potential impact on the visual resource. Of all alternatives, B is the only one showing an overall decline in quality of the visual resource. It is also the only alternative showing an overall decline in all categories of hunter and fisherman days, a result directly related to the adverse impacts on all wildlife species.

This alternative would have adverse impacts on cultural resources and on four of the five areas currently involved in the wilderness review process. Sixty-six percent of all recorded cultural sites in the EIS area would be subjected to increased adverse impacts as a result of the higher vegetative allocation scheduled for livestock under Alternative B.

Social impacts would be varied. There would be no impacts on the ranching way of life. However, the hunting and fishing segment of the public would be adversely affected, as they would have reduced hunting opportunity due to declining wildlife habitat and populations. Alternative B is the only alternative exhibiting this projected adverse social impact.

Beneficial impacts on vegetation under Alternative B would be similar to those projected under Alternative A, with two exceptions. Alternative B would result in a slightly higher vegetative production due to increased acreage proposed for seeding to suitable rangeland grasses, forbs and browse. Also, Alternative B would exhibit an overall cover figure of 25 percent, whereas the percent cover would improve under Alternative A.

ALTERNATIVE C

NO LIVESTOCK GRAZING

The overall objective of this alternative is to maximize opportunity for the affected environment to return to its natural state. Toward that end, grazing by domestic livestock would be disallowed on public lands in the EIS area. BLM would continue to manage the public lands for all other non-livestock multiple use values, as mandated in the Federal Land Policy and Management Act (FLPMA) of 1976.

Specific objectives of Alternative C (No Livestock Grazing) include:

- --Significantly decreasing potential soil erosion rates.
- --Significantly improving the condition of riparian zones.
- --Increasing vegetative production and maintaining natural plant species diversity.
- --Improving aquatic wildlife habitat throughout the EIS area.
- --Restoring a more natural landscape to the EIS area, thus improving the visual resource.
- --Ceasing livestock caused damage to cultural resource sites.

VEGETATIVE ALLOCATION

All forage would be reserved for values other than livestock grazing. All grazing permits and cooperative agreements for livestock use on the public lands would be cancelled, beginning with the 1981 grazing season. The rangeland vegetation in the EIS area would be apportioned as follows:

	Pounds	Percent
Allocation to Livestock	0	0
Allocation to Wildlife	20,018,400	5
Allocation to Non-consumptive Uses (watershed cover, aesthetics)	399,107,032	95
Total Vegetation	419,125,432	100

This apportionment of the vegetative resource would provide ample forage for IDFG 1990 big game population estimates on the public lands.

GRAZING MANAGEMENT

All public land in the EIS area would be unallotted, and existing Allotment Managment Plans would be cancelled. Livestock trailing permits would be issued as necessary to allow livestock movement to or from National Forest, State and privately owned lands. BLM would provide range use supervision.

RANGE DEVELOPMENT

Existing range developments and land treatments would be maintained only if considered beneficial for non-livestock uses such as wildlife, watershed protection or cultural resources. Any structural developments detrimental to wildlife would be removed. Livestock operators with investments in cooperative range development projects (e.g., fencing) would be entitled to appropriate salvage rights. No new range development projects would be undertaken unless necessary for non-livestock programs.

CONSEQUENCES

Based upon the information and analysis presented in Chapters 3 and 4, Alternative C, of all alternatives, would have the most beneficial impacts on soil and water resources, the visual resource and cultural resources (see Table 2-11). There would be no impact projected on the five Wilderness Inventory Units.

Although the benefit to the vegetative resource would be pronounced, it differs from that achieved by Alternative D (Decreased Livestock Use) in only a slight increase in cover at the expense of complete elimination of livestock grazing.

Overall, Alternative C would be beneficial to wildlife. However, the bottom line benefit is slightly less than that to be realized from Alternative D. The difference is primarily due to greater mule deer productivity under D than C. This is because mule deer are a successional species that do best in areas of sub-climax vegetation, a condition achieved by livestock grazing on grasses in spring and summer. Under Alternative C, mule deer numbers would decline in the long term as vegetative species on winter ranges moved toward climax.

A significant increase in hunting and fishing days would result from this alternative. Only Alternative D would have a greater increase. Under C, mule deer hunter participation rates would decline slightly in the long term. Upland game bird species such as blue grouse, sharp-tailed grouse and Hungarian partridge would show substantial increases, with hunting opportunity for these speices more than compensating for the loss of deer hunter days.

Socio-economic impacts resulting from Alternative C would be highly adverse. Livestock operators who are dependent upon BLM grazing privileges would suffer financial losses of a magnitude sufficient to have county-wide and regional significance. There could be major disruption of the family units, out migration in search of employment and community wide dissatisfaction with BLM and government.

ALTERNATIVE D

DECREASED LIVESTOCK USE

The initial and long-term livestock forage level for Alternative D is 33,082 AUMs. This is 51 percent of the five-year average licensed use and 40 percent of the active grazing preference.

Forage totaling 25,023 AUMs would be available to meet IDFG 1990 big game wildlife population projections for the public land. This level of wildlife forage is 39 percent greater than the existing wildlife allocation.

Range improvements required to implement Alternative D include 15.6 miles of stream fencing and two big game water guzzlers.

The overall objective of Alternative D is to maximize non-livestock uses and values, particularly wildlife and specific fisheries, recreation, watershed and aesthetics, without complete disruption of the socio-economic conditions associated with livestock husbandry on public lands within the EIS area.

Specific objectives include:

--Providing the additional forage to satisfy IDFG 1990 population projections for mule deer, elk and antelope.
--Maximizing fishery habitat and improving riparian condition on selected streams.
--Providing increased habitat diversity for game and non-game wildlife.
--Maximizing hunting and fishing recreation opportunity.
--Improving range vegetation condition and trend.
--Improving scenic quality throughout the EIS area.

VEGETATIVE ALLOCATION

The initial and long-term authorized livestock vegetative allocation would be 33,082 AUMs (see Table 2-9). The vegetative allocation is based on the 1977-78 vegetative inventory. Vegetative allocation would be achieved by adjusting livestock numbers, seasons of use or a combination of both over a period of three years, with the last year projected to be the 1983 grazing season.

Sufficient wildlife forage (25,023 AUMs) would be available to satisfy IDFG 1990 big game wildlife population projections.

Vegetation not allocated to livestock and wildlife would be available for non-consumptive uses such as watershed and aesthetics. To summarize:

	Initial		Long Term	
	Pounds	Percent	Pounds	Percent
Allocation to Livestock	26,465,600	7	26,465,600	6
Allocation to Wildlife	20,018,400	5	20,018,400	5
Allocation to Non-consumptive Uses (watershed cover, aesthetics)	345,968,758	88	372,641,432	89
Total Vegetation	392,452,758	100	419,125,432	100

GRAZING MANAGEMENT

Livestock would continue to utilize the existing 85 allotments under present management systems (see Table 2-5), but seasons of use would be adjusted in the manner described under Alternative A (Proposed Action). Unallotted areas would be protected from livestock grazing. Conversions in class of livestock would be permitted only if they were determined to be beneficial to wildlife, watershed and other non-consumptive uses. Use supervision would be provided, as under each of the other alternatives.

The operational and monitoring aspects of grazing system management would be the same as described under Alternative A.

RANGE DEVELOPMENT

Existing range developments and land treatments would continue to be maintained in a useable condition. No new livestock range developments or

Table 2-9

Alternative D -
Proposed Livestock Forage Allocation

Allotment	PRESENT LIVESTOCK GRAZING USE				PROPOSED LIVESTOCK GRAZING USE				PROPOSED LIVESTOCK ADJUSTMENTS (%)			
	Authorized Livestock AUMs	Suspended Non-Use	5 Yr. Average Licensed Use	Number and Class of Livestock	Short Term Initial Forage Allocation	Additional AUMs Available From:		Long Term Total AUMs Available	From Authorized Use		From 5 Yr. Average	
						Grazing Systems	Land Treatments		Short Term	Long Term	Short Term	Long Term
Houtz Canyon	512	0	512	128c	129			129	-75	-75	-75	-75
Table Mountain	0	0	0	- - -	60			60	- -	- -	- -	- -
Cedar Ridge	0	0	0	- - -	37			37	- -	- -	- -	- -
Side Canyon	24*	0	24	24c	5			5	-79	-79	-79	-79
Cold Water	16*	0	16	8c	7			7	-56	-56	-56	-56
Register Rock	2*	0	2	- - - 10h	1			1	-50	-50	-50	-50
Rock Creek	24*	0	24	150c	12			12	-50	-50	-50	-50
Curlew	25,303	0	22,079	8,026c, 87h, 4,680s	11,398			11,398	-55	-55	-48	-48
South Stone	3,820	0	2,487	2,558c	1,542			1,542	-60	-60	-38	-38
South Bull	582	86	399	166c	290			290	-50	-50	-27	-27
Pleasantview	18,051	0	13,850	4,864c, 2,755s	5,593			5,593	-69	-69	-60	-60
Samaria	5,471	0	3,716	2,608c, 750s	1,601			1,601	-71	-71	-57	-57
Walker	150	0	150	44c	34			34	-77	-77	-77	-77
Madsen	44	0	42	36c	13			13	-70	-70	-69	-69
Hanzel Mountain	3,470	0	1,134	502c, 4,800s	1,735			1,735	-50	-50	+53	+53
Big Onion	1,959	0	1,914	1,464c	729			729	-63	-63	-62	-62
Cedar Mountain	100*	0	100	100c	50			50	-50	-50	-50	-50
Dairy Creek	1,014	0	784	264c	390			390	-62	-62	-50	-50
East Daniels	14	0	3	50c	7			7	-50	-50	+133	+133
Deep Creek	39	0	39	24c	10			10	-74	-74	-74	-74
East Fork	1,373	0	1,138	814c, 7h	371			371	-73	-73	-67	-67
Roy Arbon	6,141	0	5,434	1,424c, 4,670s	3,070			3,070	-50	-50	-44	-44
Indian Springs	1,983	117	1,394	730c	613			613	-69	-69	-56	-56
Black Rock	726	0	693	- - - 2,714s	363			363	-50	-50	-48	-48
Michaud Creek	550	0	526	250c, 10h	275			275	-50	-50	-48	-48
2 1/2 Mile	539	0	539	387c, 8h	219			219	-59	-59	-59	-59
Moonlight Mine	200	0	167	- - - 909s	100			100	-50	-50	-40	-40
Rapid Creek	378	125	363	228c	227			227	-40	-40	-37	-37
Inkom	756	752	462	746c	426			426	-44	-44	-8	-8
Stanger	147	49	147	49c	61			61	-59	-59	-59	-59
Shoestring	222	183	230	24c 134s	203			203	-9	-9	-12	-12
Bullock	25	0	25	50c	6			6	-76	-76	-76	-76
Goodenough	26*	0	26	25c	7			7	-73	-73	-73	-73
McCammon	303	174	230	60c, 1,100s	220			220	-27	-27	-4	-4
Price	60	0	48	30c	30			30	-50	-50	-63	-63
Toponce	636	0	648	400c, 900s	324			324	-49	-49	-50	-50
Hebdon	34	0	34	100c	17			17	-50	-50	-50	-50
Taylor	44	0	26	- - - 1,100s	22			22	-50	-50	-15	-15
Bancroft	2,200	497	1,918	423c 1,500s	612			612	-72	-72	-68	-68
Wistisen	32	22	33	111c	27			27	-16	-16	-18	-18
Fish Creek	503	0	255	15c 900s	252			252	-50	-50	-1	-1
Rowsell	18	0	6	3c	2			2	-89	-89	-67	-67
Lund	503	0	299	- - - 1,165s	251			251	-50	-50	-16	-16
Crystal	1,144	762	868	355c	571			571	-50	-50	-16	-16
Swim Ind.	42	0	0	60c	21			21	-50	-50	- -	- -
Tate Ind.	31	0	30	30c	6			6	-81	-81	-80	-80
Myler	18	0	18	16c	9			9	-50	-50	-50	-50
Garden Creek	28	36	28	7c	32			32	+14	+14	+14	+14
Stewart Ind.	150	0	150	50c	75			75	-50	-50	-50	-50
Soloago	606	0	193	- - - 3,230s	303			303	-50	-50	+57	+57
Rogers Ind.	51	0	51	- - - 750s	25			25	-51	-51	-51	-51
Hatley	25	0	25	25c	12			12	-52	-52	-52	-52
Preslar Ind.	7	0	4	21c	3			3	-57	-57	-25	-25
Rocks	700	650	419	432c	132			132	-81	-81	-68	-68
Johnson	143	0	57	26c	56			56	-61	-61	-1	-1
Anderson	110	0	0	79c	55			55	-50	-50	- -	- -
Howe	18*	0	18	60c	5			5	-72	-72	-72	-72
L. Allen	52	0	52	13c	26			26	-50	-50	-50	-50
B. Almond	9	0	9	2c	4			4	-56	-56	-56	-56
T. Bloxham	10	0	10	2c	1			1	-90	-90	-90	-90
A. Brady	6	0	6	1c	1			1	-83	-83	-83	-83
C. Criddle	6	0	6	1c	1			1	-83	-83	-83	-83
Cambridge	251	0	251	50c	72			72	-71	-71	-71	-71
N. Casperson	58	0	35	12c	16			16	-72	-72	-54	-54
Criddle & Sons	63	0	63	11c	32			32	-49	-49	-49	-49
R. Davis	40	0	40	7c	6			6	-85	-85	-85	-85
Egan	79	0	79	14c	16			16	-80	-80	-80	-80
Cottonwood	88	0	88	18c	15			15	-83	-83	-83	-83
A. Evans	50	0	50	9c	13			13	-74	-74	-74	-74
W. Furiman	6	0	6	1c	1			1	-83	-83	-83	-83
D. Hadley	10	0	10	3c	3			3	-70	-70	-70	-70
Hatley Ind.	19	0	19	4c	6			6	-68	-68	-68	-68
G. Jensen	6	0	6	1c	1			1	-83	-83	-83	-83
S. Kent	17	0	17	3c	9			9	-47	-47	-47	-47
Larson	6	0	6	1c	3			3	-50	-50	-50	-50
McNee	20	0	20	20c	5			5	-75	-75	-75	-75
Marley	12	0	12	3c	6			6	-50	-50	-50	-50
P. Morrison	18	0	18	3c	5			5	-72	-72	-72	-72
W. T. Evans	40	0	40	8c	20			20	-50	-50	-50	-50
Rt. Hand Grazing	132	0	132	26c	43			43	-67	-67	-67	-67
Salveson	142	0	142	22c	71			71	-50	-50	-50	-50
Servoss Bros.	40	0	40	6c	20			20	-50	-50	-50	-50
Thompson	192	0	192	43c	29			29	-85	-85	-85	-85
Tippits	8	0	8	1c	4			4	-50	-50	-50	-50
L. Roberts	15	0	15	3c	7			7	-53	-53	-53	-53
TOTAL	82,462	3,453	65,149	38,331c;122h;32,057s	33,082				-59.9	-59.9	-49.2	-49.2

*All authorized use has been Temporary Non-Renewable.

land treatments would be authorized except in emergency cases such as after wildfire.

The wildlife range developments listed in Table 2-10 are needed to meet Alternative D objectives of improving aquatic wildlife habitat and fishery production and, in the case of the guzzlers, increasing mule deer utilization on 12,000 acres of summer range.

Table 2-10

Alternative D -

Proposed Wildlife Range Developments

	Developments		Estimated Development Cost		Estimated Yearly Maintenance Cost		Acres Disturbed		
Allotment	Total Units	Type*	Per Unit	Total	Per Unit	Total	Per Unit	Total	Year Completed
P. Morrison	1.0 mi.	F	$ 2,500	$ 2,500	$ 60	$ 60	1.20	1.20	1981
Bullock	1.0 mi.	F	2,500	2,500	60	60	1.20	1.20	1981
Crystal	5.0 mi.	F	2,500	12,500	60	300	1.20	6.00	1981
Goodenough	.4 mi.	F	2,500	1,000	60	24	1.20	.48	1981
Toponce	1.1 mi.	F	2,500	2,750	60	66	1.20	1.32	1981
Moonlight Mine	2.2 mi.	F	2,500	5,500	60	132	1.20	2.64	1981
Shoestring	1.7 mi.	F	2,500	4,250	60	102	1.20	2.04	1981
Cottonwood	3.2 mi.	F	2,500	8,000	60	192	1.20	3.84	1981
Hanzel Mountain	2	G	4,000	8,000	100	200	.25	.50	1981

TOTALS BY PROJECT TYPE

Guzzler	2	G		8,000		200		.50	
Fence	15.6 mi.	F		39,000		936		18.72	
TOTALS				$47,000		$1,136		19.22	

*F = Fence G = Guzzler

CONSEQUENCES

Based on the information and analysis presented in Chapers 3 and 4, this alternative would have many of the same effects projected under Alternative C (No Livestock Grazing), though usually to a lesser degree (see Table 2-11).

Resources benefited include soil and water, vegetation, wildlife, recreation and the visual resource. All recorded cultural resource sites would continue to be adversely affected, but at a lower intensity than at present. Wilderness Inventory Units would be unaffected.

Alternative D would be the most beneficial alternative for wildlife and recreation, but socio-economic conditions would in general be adversely affected.

ALTERNATIVE E

NO ACTION--CONTINUE EXISTING SITUATION

The objective of this alternative is to preserve the status quo. The present level of livestock grazing would be continued without change.

VEGETATIVE ALLOCATION

The active grazing preference would remain at 82,462 AUMs. Licensed use would continue at 65,149 AUMs, which is the average active licensed use level established by EIS area livestock operators over the five-year period 1974-1978. The active authorized livestock use and five-year average active use levels by allotment are listed in Table 2-4.

The 18,021 AUM forage reservation for big game wildlife would remain unchanged: however, in the long run grazing by mule deer above inventoried forage capacity on some allotments and deer/cattle forage competition would result in a 67-AUM decline in available wildlife forage. The total vegetative biomass would be apportioned as follows:

	Initial		Long Term	
	Pounds	Percent	Pounds	Percent
Allocation to Livestock	52,119,200	13	52,119,200	13
Allocation to Wildlife	14,416,800	4	14,363,200	4
Allocation to Non-consumptive Uses (watershed cover, aesthetics)	325,845,558	83	327,598,356	83
Total Vegetation	392,452,785	100	394,080,756	100

GRAZING MANAGEMENT

Livestock would continue to utilize the 85 allotments under existing grazing systems (Table 2-5). Existing AMPs (Samaria, Pleasantview, Dairy Creek, Bancroft and Inkom) would continue to be followed. No new AMPs would be implemented. The five unallotted areas (Trayis, Etcheverry, Downey Watershed, Table Mountain, Cedar Ridge) totaling 5,732 acres would continue to be utilized as relief areas to accommodate livestock use that has temporarily been suspended from another allotment due to a lack of forage caused by fire, drought or some other disaster. The 6,252 acres of isolated public land parcels would continue to be off-limits for livestock grazing.

BLM would provide the use supervision to minimize grazing trepass. No conversions in class of livestock would be permitted.

RANGE DEVELOPMENT

Existing structural improvements would be maintained in a useable condition. No new improvements would be initiated.

Land treatment work would be initiated only in emergency cases such as after wildfire. Existing land treatments would be maintained in as close to their current state as feasible.

CONSEQUENCES

Alternative E continues present livestock grazing management. In some respects this is a "middle-of-the-road" alternative.

Based on the information and analysis presented in Chapters 3 and 4 (see Table 2-11), there would be no effect on recreation, watershed condition and economics.

Potential soil erosion rates would increase on 37 percent of the EIS area. This is three times greater than the impact predicted under Alternative A (Proposed Action), but less than one-half the impact predicted under Alternative B (Increased Livestock Use).

Vegetation would actually show a very slight increase in condition and production, while the trend would remain static. Vegetative cover would remain at 25 percent, the same as projected under Alternative B. Continuation of current grazing management would keep all riparian areas in a degraded state.

The wildlife impacts associated with Alternative E would be mixed. Big game, sensitive species, waterfowl and fisheries would be adversely affected, though to a lesser degree than by Alternative B. Upland game and non-game species would maintain existing population levels. The total big game vegetative allocation would actually be 196 AUMs higher than under Alternative B.

The effect on the visual resource would be favorable. Over the long term this alternative could result in 22,000 acres improving sufficiently to justify their being upgraded into a higher quality Visual Resource Management (VRM) class. The overall improvement in VRM class places this alternative ahead of Alternatives A and B in terms of benefiting the visual resource, but well behind Alternatives C and D. Alternative E would have the greatest negative effect on wilderness as all five of the Wilderness Inventory Units would be adversely affected.

All recorded cultural resource sites would continue to be adversely affected, with the impact level severest on that 30 percent within allotments currently grazed above inventoried forage capacity.

Social impacts would be mixed. Ranchers would have positive feelings that the status quo was maintained. Recreationists and environmental interests, on the other hand, would be mildly dissatisfied because of what they perceived as gains by ranchers.

Table 2-11

Summary of Impacts by Alternative

Elements Evaluated	Alternative A Proposed Action	Alternative B Increased Livestock Use	Alternative C No Livestock Grazing	Alternative D Decreased Livestock Use	Alternative E Continue Existing Situation
SOIL					
Change in Potential Erosion Rates (% of EIS area)					
Increase	12%	75%	0	0	37%
Decrease	67%	3%	98%	92%	14%
Significant Change (over 20%) in Potential Erosion Rates (% of EIS area):					
Increase	6%	10%	0	0	1%
Decrease	25%	0	45%	32%	0
Estimated Erosion Rate: Tons/Acre/Year (T/A/Y)	2.25	2.39	1.81%	1.98%	2.41
Improvement From Present (2.44 T/A/Y) Rate	8%	2%	26%	19%	1%
Sufficient Recommended Watershed (over 60%) Cover (% of EIS area):	2%	1.9%	31%	16%	2%
WATER RESOURCES					
Watershed Condition Changes Near Important Waters (area %)					
Improvement	54	2	98	65	4
Decline	12	67	0	0	0
No Change	34	31	2	35	96
Bacterial and Chemical Pollutants	No Change	No Change	Improvement	Improvement	No change

Overall Regional Significance to Water Resources	None	None	10% Maximum Improvement	Small Improvement Probably Less Than 5%	No change
Water Supply	Impact of livestock grazing on water supply is considered insignificant. Total consumptive use under the maximum livestock levels would be less than 125 acre-feet annually, representing much less than 1 percent of the total water use in the area.				
VEGETATION					
Production:					
Biomass Pounds	412,117,555	414,324,265	419,125,432	419,125,432	394,080,756
Net Change	+19,664,797	+21,871,507	+26,672,674	+26,672,674	+ 1,627,998
Forage AUMs	176,864	177,927	179,283	179,283	168,528
Net Change	+ 9,070	+10,133	+11,489	+11,489	+ 734
Trend: (acreage %)					
Upward (Present 38%)	69%	69%	74%	74%	4%
Static (Present 60%)	31%	31%	26%	26%	95%
Declining (Present 2%)	0	0	0	0	1%
Condition: (acreage %)					
Good (Present 26%)	78%	78%	80%	80%	28%
Fair (Present 54%)	19%	19%	20%	20%	52%
Poor (Present 20%)	3%	3%	0	0	20%
Grazing Treatments (acreage %)					
Before seedripe (Present 73%)	53%	53%	0	73%	73%
After seedripe (Present 14%)	33%	33%	0	14%	14%
Yearlong rest (Present 13%)	14%	14%	100%	13%	13%
Grazing Systems (acreage %)					
Rest Rotation (Present 35%)	38%	38%		35%	35%
Deferred Rotation (Present 6%)	47%	47%	None	6%	6%
Deferred Use (Present 7%)	8%	8%		7%	7%
Seasonal Use (Present 52%)	7%	7%		52%	52%
Cover (Present 25%)	26%	25%	30%	28%	25%

	Alternative A (cont'd)	Alternative B (cont'd)	Alternative C (cont'd)	Alternative D (cont'd)	Alternative E (cont'd)
WILDLIFE					
Endangered, Threatened and Sensitive Wildlife	Bald eagle, peregrine falcon and long-billed curlew benefited. Seven percent of ferruginous hawk nests abandoned in Black Pine Valley.	Raptors and predators adversely affected. Twenty percent of ferruginous hawk nests abandoned in Black Pine Valley.	Overall benefit because of a stable prey base.	Overall benefit because of a stable prey base.	Raptors and predators adversely affected because of erratic prey base.
Big Game:					
Mule deer	Fall livestock grazing after 9/30 adversely affecting 33% of all deer winter range. Rt. Hand Allotment winter deer herd reduced 50 percent to 15 head by proposed chaining. 88 deer on Downey Front not allocated forage (263 AUMs short). IDFG mule deer population goals for 1985 would be met except on Downey Front.	Insufficient forage to satisfy 1978 population estimates (263 AUMs short on Downey Front). Fall livestock grazing after 9/30 adversely affecting 33% of all deer winter range. 90-125 deer loss projected because of heavy livestock use and proposed projects.	IDFG population goals met through 1990 (24,200 AUMs). Deer population decline projected beyond 1990 as vegetation composition changes from browse to grass as climax community is approached.	IDFG population goals met through 1990 (24,200 AUMs). Adequate level of livestock grazing to maintain long-term productivity of important shrub (winter) ranges. Reduced livestock grazing levels would more than compensate for early spring or late fall grazing.	Habitat quality for mule deer to remain below carrying capacity. Winter range condition along the Downey Front would continue to decline. (263 AUMs short)
Antelope	Forage allocation will meet the 1985 population estimates. Major limiting factor lack of open range rather than lack of forage.	Forage allocation 52 AUMs short of 1985 population estimates. Additional population stress created by increased grazing pressure, lack of rest treatments in grazing systems and proposed project work (5-10 head loss).	Numbers limited by existing migration barriers associated with private farms in northern Utah. 1990 estimates will be met (181 AUMs).	Numbers limited by existing migration barriers associated with private farms in northern Utah. 1990 estimates would be met (181 AUMs). No measurable conflicts with livestock.	Long-term population decline resulting from decreased grass/forb productivity in Black Pine seedings. Livestock/antelope competition for forbs intensifying in spring in favor of livestock.
Elk	Forage allocation increases of 5 to 214 percent in allotments (except Big Onion) with elk would adversely affect population. Impact is one social intolerance as elk avoid livestock, causing useable elk habitat to decline. 1985 population estimates will be met (552 AUMs).	Elk population to remain static. Social intolerance would be a major conflict. 1985 estimates would be met (552 AUMs).	1990 population estimates would be met (642 AUMs).	1990 population estimates would be met (642 AUMs).	Overall elk numbers would benefit from the continued situation, even though 12 percent of all habitat or 2,100 acres in the Big Onion Allotment would be overgrazed. 1990 population estimates would be met (642 AUMs).

Upland Game:					
Sage Grouse	Populations to remain at current levels. Short-term population decline from vegetative conversions and new grazing systems. Rest and deferred rotation grazing systems concentrating use in nesting and brood-rearing habitat prior to 6/15 would cause decreased brood-rearing success. Water developments beneficial to sage grouse due to increased water distribution.	Long term decline in sage grouse production due to loss of succulent forbs caused by livestock overgrazing in the spring and early summer (prior to 6/15). Water developments beneficial to sage grouse due to increased water distribution.	Major benefits to accrue from no grazing. Brood-rearing success to increase throughout the EIS area. Dense upland meadow vegetation becoming less productive due to decline in forbs and restricted travel by birds.	Brood-rearing success to improve throughout the EIS area due to increase in succulent forbs. Productivity of upland meadows maintained by moderate grazing, resulting in increased use by sage grouse.	Populations at current levels. Concentrated grazing of nesting and brood rearing habitat holding populations below carrying capacity. Continued overgrazing of riparian area resulting in habitat well below potential throughout EIS area.
Sharp-tailed Grouse	Positive impacts as grazing systems provide ungrazed or lightly grazed areas that sharp-tail select for nesting. Water developments beneficial to sharp-tail.	Sharp-tail numbers to decline due to a lack of ungrazed and lightly grazed nesting areas. Sharp decline because of loss of important winter habitat.	Nesting cover improvement, resulting in increased brood-rearing success. Significant increase in succulent forb growth for spring-summer forage.	Nesting cover to improve. Increased brood-rearing success. Moderate livestock grazing to prevent upland meadows from becoming rank and undesirable for sharp-tailed grouse.	Maintain existing populations.
Other Upland Game	All other upland game would benefit from improved livestock management.	All other upland species adversely affected by increased livestock grazing levels.	Overall benefit.	Overall benefit.	All other upland game species--the same as sage and sharp-tailed grouse.
Waterfowl:	Wiregrass Reservoir fencing highly beneficial. Nesting production to increase 50 percent.	Waterfowl nesting conditions to remain in a static poor condition.	Wiregrass Reservoir waterfowl production highly enhanced. Nesting success to increase 50 percent.	Nesting habitat to show improvement because of reduced grazing and fencing around Wiregrass Reservoir. Nesting production to show a 50 percent increase.	Waterfowl nesting condition to continue in a static poor condition.
Furbearers:	Fencing 1 1/4 miles of stream and Wiregrass Reservoir would greatly enhance furbearer habitat. Remaining unfenced riparian areas would decline in habitat quality.	Increased overuse of riparian areas to continue the decline of riparian habitat essential to furbearers.	Major benefit resulting from increased vegetative cover in and around riparian areas.	Fencing 7 miles of stream and Wiregrass Reservior would greatly enhance furbearer habitat. Increased herbaceous cover adjacent to fenced areas would also benefit furbearers.	Present overgrazed riparian areas would continue to decline in habitat quality.

<table>
<tr><th></th><th>Alternative A (cont'd)</th><th>Alternative B (cont'd)</th><th>Alternative C (cont'd)</th><th>Alternative D (cont'd)</th><th>Alternative E (cont'd)</th></tr>
<tr><td>Non-Game:</td><td>Non-game habitat improvement from grazing systems. Benefits accruing from water developments. Fencing of Wiregrass Reservoir and 1 1/4 miles of stream would provide excellent non-game habitat. Unfenced riparian areas would not improve; no increase in non-game populations.</td><td>Non-game habitat quality to decline due to habitat alteration on 6% of the EIS area. Degraded riparian zones subjected to further deterioration.</td><td>Population levels to increase. Consistent forage and cover supply is provided as the ecosystem progresses toward increased diversity and stability.</td><td>Population levels to increase. Forage and cover supply to increase. Habitat quality in riparian areas to improve. Physical and social interaction with livestock thoughout the EIS area reduced.</td><td>Population levels to decline as a result of overgrazing on 37 percent of the EIS area. Continued physical and social interaction impacts. Productive riparian areas heavily degraded.</td></tr>
<tr><td>Aquatic Wildlife</td><td>Proposed forage allocation to result in an overall decline of fishery habitat quality. Increases in excellent condition stream mileage due to proposed stream fencing. Proposed grazing systems would not improve existing fishery habitat conditions on unfenced streams.
The following fishery stream habitat conditions would be expected:
<table>
<tr><th>Condition</th><th>Present Miles</th><th>Alt.A Miles</th><th>%</th></tr>
<tr><td>Excel.</td><td>1.8</td><td>2.4</td><td>+33</td></tr>
<tr><td>Good</td><td>5.3</td><td>3.7</td><td>-30</td></tr>
<tr><td>Fair</td><td>5.7</td><td>4.4</td><td>-23</td></tr>
<tr><td>Poor</td><td>3.1</td><td>5.4</td><td>+74</td></tr>
</table></td><td>Decline of stream habitat quality would accelerate due to increased grazing and no protection of riparian areas.
The following fishery stream habitat conditions would be expected:
<table>
<tr><th>Condition</th><th>Present Miles</th><th>Alt.B Miles</th><th>%</th></tr>
<tr><td>Excel.</td><td>1.8</td><td>1.6</td><td>-11</td></tr>
<tr><td>Good</td><td>5.3</td><td>3.5</td><td>-38</td></tr>
<tr><td>Fair</td><td>5.7</td><td>5.0</td><td>-12</td></tr>
<tr><td>Poor</td><td>3.1</td><td>5.8</td><td>+87</td></tr>
</table></td><td>Very beneficial impacts to fishery habitat.
The following fishery stream habitat conditions would be expected:
<table>
<tr><th>Condition</th><th>Present Miles</th><th>Alt.C Miles</th><th>%</th></tr>
<tr><td>Excel.</td><td>1.8</td><td>7.4</td><td>+311</td></tr>
<tr><td>Good</td><td>5.3</td><td>6.6</td><td>+25</td></tr>
<tr><td>Fair</td><td>5.7</td><td>1.3</td><td>-77</td></tr>
<tr><td>Poor</td><td>3.1</td><td>0.6</td><td>-81</td></tr>
</table></td><td>Existing stream conditions improved via fencing.
The following fishery stream habitat conditions would be expected:
<table>
<tr><th>Condition</th><th>Present Miles</th><th>Alt.D Miles</th><th>%</th></tr>
<tr><td>Excel.</td><td>1.8</td><td>7.4</td><td>+311</td></tr>
<tr><td>Good</td><td>5.3</td><td>6.6</td><td>+25</td></tr>
<tr><td>Fair</td><td>5.7</td><td>1.3</td><td>-77</td></tr>
<tr><td>Poor</td><td>3.1</td><td>0.6</td><td>-81</td></tr>
</table></td><td>Trend toward declining stream habitat quality by continued overuse of riparian areas.
The following fishery stream habitat conditions would be expected:
<table>
<tr><th>Condition</th><th>Present Miles</th><th>Alt.E Miles</th><th>%</th></tr>
<tr><td>Excel.</td><td>1.8</td><td>1.8</td><td>0</td></tr>
<tr><td>Good</td><td>5.3</td><td>4.7</td><td>-11</td></tr>
<tr><td>Fair</td><td>5.7</td><td>3.6</td><td>-37</td></tr>
<tr><td>Poor</td><td>3.1</td><td>5.8</td><td>+87</td></tr>
</table></td></tr>
<tr><td>VISUAL RESOURCES
Visual Resource Management Class Changes:
(% of EIS area)</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Decline</td><td>-3%</td><td>-5%</td><td>0</td><td>Trace</td><td>-1%</td></tr>
<tr><td>Improvement</td><td>+5%</td><td>+4</td><td>+19%</td><td>+8%</td><td>+5%</td></tr>
<tr><td>Net Change</td><td>+2%</td><td>-1%</td><td>+19%</td><td>+8%</td><td>+4%</td></tr>
</table>

WILDERNESS					
Wilderness Suitability Impacts:					
Unit					
Hanzel Mountain	No Impact	No Impact	No Impact	No Impact	Adverse
South Samaria	No Impact	Adverse	No Impact	No Impact	Adverse
Petticoat Peak	Adverse	Adverse	No Impact	No Impact	Adverse
Deep Creek Peak	No Impact	Adverse	No Impact	No Impact	Adverse
South Deep Creek	No Impact	Adverse	No Impact	No Impact	Adverse
RECREATION					
Participation Rate Changes by 1990:					
Upland game hunter days	+1,000	-1,000	+4,000	+3,000	0
Mule deer hunter days	0	-2,150	-150	+2,850	0
Fisherman days	+300	0	+300	0	0
CULTURAL RESOURCES	62 percent of all recorded sites subjected to increased adverse impacts.	66 percent of all recorded sites subjected to increased adverse impacts.	No damage to cultural sites from livestock grazing.	All recorded sites would continue to be affected, but at a lower intensity than at present.	All recorded sites adversely affected. Impact level severest on 30 percent of all sites, those within the 39 allotments being grazed above inventoried capacity.
ECONOMICS					
Income					
Annual Changes					
Short term*	-$78,777	+$73,302	-$2,767,338	-$1,370,510	0
Intermediate*	+$60,607	+$64,938	-$2,755,765	-$1,339,597	0
Long term*	+$76,722	+$56,477	-$2,764,691	-$1,362,188	0
Net present value	+$99,478	+$716,276	-$29,542,331	-$14,492,466	0

	Alternative A (cont'd)	Alternative B (cont'd)	Alternative C (cont'd)	Alterantive D (cont'd)	Alternative E (cont'd)
Employment Short term	-9	+3	-235	-115	0
Intermediate	+4	+2	-235	-112	0
Long term	+6	+1	-235	-114	0
SOCIAL CONDITIONS					
Ranching way of life	No major impact to the ranching life style. However, secondary employment could be necessary to augment incomes in the short term.	No major impact on the ranching way of life.	There could be major disruption of family ranching units.	Adverse impacts similar to, but less severe than, those projected under Alternative C.	No effect.
Recreation	More opportunity for use.	Reduced hunting and fishing opportunities. Recreationists would have to supplement their activities outside of the EIS area.	Increased hunting and fishing opportunity. Aesthetics enhanced.	Increased hunting and fishing opportunity. Aesthetics enhanced.	No effect.
Attitudes	Some feelings of disassociation on the part of ranchers in terms of government manipulation. However, some would have positive feelings as a result of grazing increases.	There could be some feelings of powerlessness in terms of swaying the decision on the part of both ranchers and recreation users.	Extreme feelings of dissatisfaction and powerlessness on the part of those who lose their ranching operations or incomes. If out migration occurred, there would be community-wide dissatisfaction with government.	Adverse impacts similar to, but less severe than, those projected under Alternative C.	The ranchers would be saitisfied with a continuation of the status quo. Recreationists would be mildly dissatified because of perceived gains by ranchers.

CHAPTER 3

AFFECTED ENVIRONMENT

Approximately 85 percent of the Bannock-Oneida EIS area lies within the Great Basin and Range Physiographic Province, the remaining 15 percent in the Columbia Plateau Province. The general landform pattern characterizing the area is a combination of rolling plains and valley floors bordered by low foothills and more rugged mountain ranges. Elevations on public land in the EIS area range from a low of 4,200 feet in the valleys to 8,670 feet atop Deep Creek Peak (see Map 3-0).

The Basin and Range Province is characterized by a series of steep north-south tending mountain ranges that rise abruptly from semi-arid, principally sagebrush-covered valleys. The foothills and meadows provide opportunities for ranching and dry farming, with irrigated farming practiced in some of the valleys. The northern portion of the EIS area is part of the Columbia Plateau, primarily a flat to rolling plain of basaltic lavas traversed by the Snake River. The soils, rich in volcanic ash, provide for good agricultural crop production and range land.

Native vegetation consists primarily of sagebrush-grass associations in the valleys and juniper-grass associations in the foothill areas. On higher elevation areas, Douglas fir stands may be found on north- and east-facing slopes, with aspen communities often occurring in canyon bottoms, along stream channels and in other wet areas. Localized riparian and meadow communities are found throughout the area, with various shrub species (mountain mahogany, serviceberry, chokecherry) occurring locally at higher elevations.

Idaho is west of the Continental Divide, and despite being 500 miles from the coast, its weather is influenced primarily by maritime air masses originating over the Pacific Ocean. Eastern Idaho, including the EIS area, has a more continental climate than northern Idaho, with wider ranges between summer and winter temperatures. Wet winters and dry summers prevail.

Annual precipitation for the area is 10-40 inches, 60 percent of which usually occurs as snow. Precipitation is typically heavier in the mountains than in the flats or valleys. Temperatures range from an average maximum of 89°F in July to an average minimum of 12°F in January.

Modern or improved access is provided into the EIS area via interstate travel on the east and north by I-15 and across the southwest corner by I-80N. Heavy snows occasionally close I-80N near the Idaho/Utah border. Several two-lane State highways provide year round access into the central portion of the area.

The Snake River, of which American Falls Reservoir is a part, forms the northern border of the EIS area. The largest river within the EIS area is the Portneuf, which empties into American Falls Reservoir northwest of Pocatello. The characteristic topographic relief of this area is accented by numerous intermittent and perennial streams, some of which support native trout fisheries.

Air quality over the EIS area is generally good, although degraded at times by industrial pollution originating around Pocatello and at times from sources in Salt Lake City south of the EIS area.

The EIS area is rectangular in shape, measuring approximately 65 miles east-west and 75 miles north-south. Total population within the EIS area is approximately 70,000. Pocatello, the second largest metropolitan center in the State, is the largest community in the area, with a population of approximately 50,000. Other population centers include American Falls (3,500), Chubbuck (6,000), Lava Hot Springs (900) and Malad City (1,700). With the exception of these few population centers, the demographic character of the EIS area is predominantly rural/agricultural, with the major land uses including dry and irrigation farming, ranching, open space and wildlife habitat.

The earliest use of the EIS area for grazing of domestic livestock was around 1854, when portions of the Malad Valley were used as cattle range by early settlers. By 1860 large livestock operations were underway throughout most of the area. In the late 19th Century the percentage of the local populace involved in livestock grazing was at its highest. Since that time the proportion has declined, although the values and lifestyles associated with ranching continue to exert influence in the area.

Presently, 245 livestock operators are authorized to graze on public land in the EIS area. The five-year average annual livestock use for the period 1974-1978 was 65,149 *Animal Unit Months (AUMs)*.* Operations range in size from six to 3,667 active licensed AUMs. Cattle operators in the EIS area are numerous and comparatively small. As shown in the Economics section (see p. 3-26), most ranchers in the area run 50-149 head. Increases in herd sizes are limited by hay production and wintering capacity on the ranches. Demand for grazing in the spring, summer and fall on public lands administered by BLM and the U.S. Forest Service has resulted in numerous community allotments, some with as many as 70 individual operators. Eleven grazing associations, each with its own Board of Directors, officially conduct business and represent the individual members within the EIS area.

Although some operators rely on ranching as their primary source of income, most are not large enough to give total commitment of time and effort to this endeavor alone. The typical rancher in the EIS area maintains a cow/calf operation that does not hold over calves for feeding and sales to yearling age or require a high investment in machinery, equipment or livestock facilities. Sheep operators, who account for about 5 percent of the total livestock operations, vary in size from a few hundered to several thousand sheep. While some operations lamb on the open range, most lamb in sheds at

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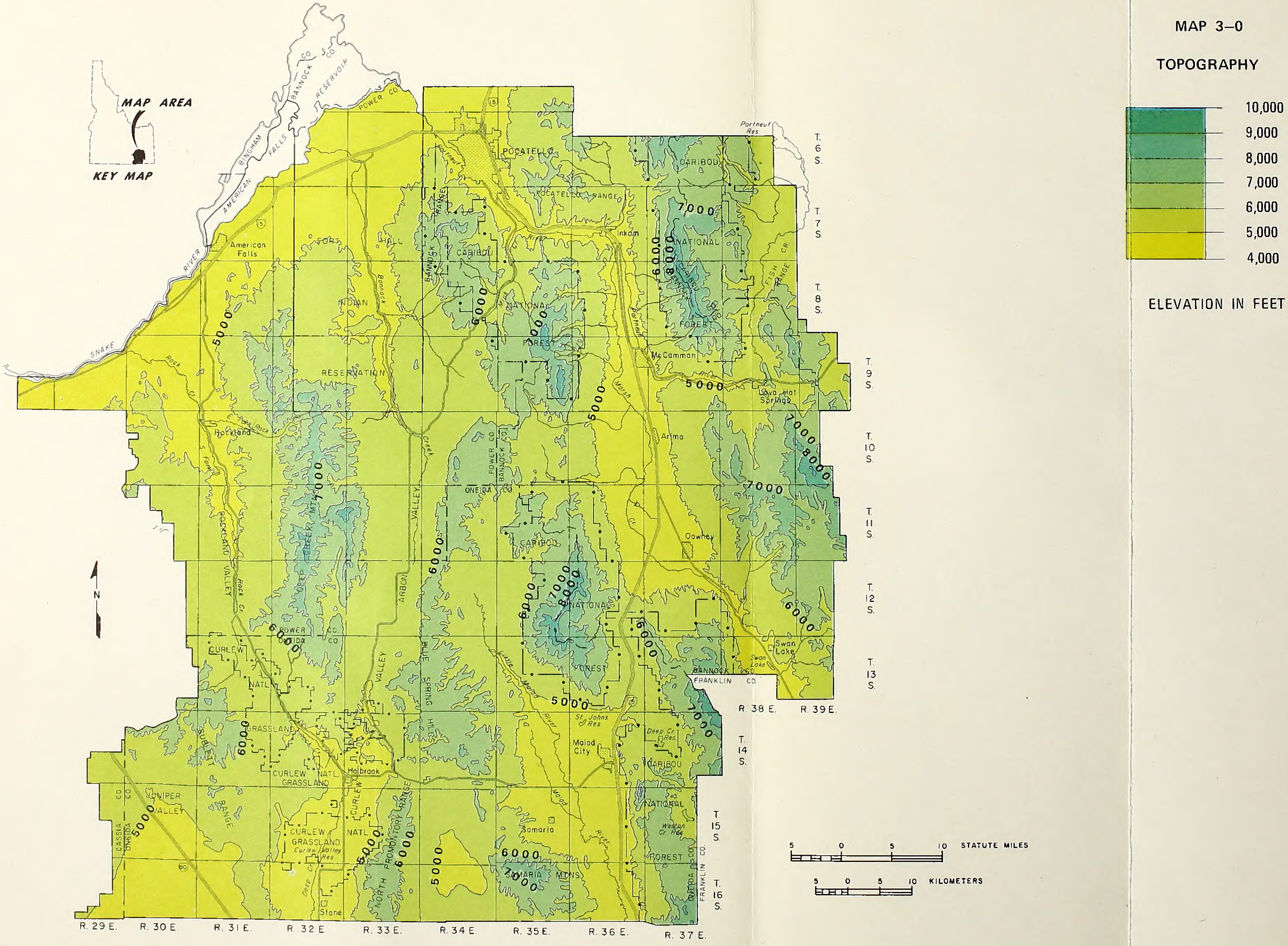
*Terms appearing in italics are defined in the Glossary.



MAP 3–0

TOPOGRAPHY

locations outside the EIS area, with lambs taken off the summer range and shipped and sold at that time. Sheep grazing has steadily been converting to cattle use, as is the trend throughout the western United States.

Over the years a wide network of range improvements has been developed to facilitate management of grazing livestock and to improve rangeland resource conditions (see Map 3-1 in the packet at the back of this volume). This network includes:

200 miles of fence	55 reservoirs	78 spring developments
145 miles of pipeline	59 cattleguards	26,189 acres of seedings
190 troughs	2 catchments	7,438 acres of sprayings

Opportunity exists for expansion of this network to further enhance rangeland resource conditions and to make possible the implementation of additional grazing systems.

I. SOILS

The soils of the Bannock-Oneida EIS area vary greatly, reflecting different dominating influences in their development. Some soils in the northern portion have been influenced by the Snake River, while many soils to the south, in Oneida County, show influences from ancient Lake Bonneville. Soils along the major rivers and creeks throughout the EIS area have been formed from alluvial material of mixed origin. Many soils located on middle terraces and uplands have been influenced by wind-deposited, fine-textured materials. Soils in the mountainous regions have been developed in residual bedrock and influenced by the steep terrain and cool temperatures found at higher elevations.

The different dominating forces are reflected in soil properties such as texture, drainage, degree of development, *permeability* and *infiltration rates*. Soil properties in turn affect erodibility and *soil productivity*. Soils found on the steeper mountain slopes exhibit higher erosion hazards than those found on more level terrain. The amount of vegetative cover also affects erodibility. Shallow soils or those with poor or excessive drainage can limit the types and quantities of vegetative cover at a given location.

Three detailed, third-order soil surveys have been conducted over the entire EIS area by the Soil Conservation Service (SCS) under the National Cooperative Soil Survey covering Power, Oneida and Cassia, and Bannock and Caribou Counties. The soil survey information was then used as support in calculating forage production and erosion rates. Since the original soil data is too detailed for this publication, a general soil association map is presented here (Map 3-2) to give an overview of the existing soils and potential vegetation. Soil associations have been grouped mainly on the basis of parent material, physiography and climatic zones. The associations are generalized and do include soils of other mapping units.

Soils occurring on sites of the proposed chaining or burning and seeding treatments are predominantly lacustrine and alluvial sediments with some residual mountain soils. All of the sites selected for treatment are on deep, well drained soils with shallow slopes. Erosion susceptibility is slight; however, some wind erosion could occur if the project were done during a drought year.

Some soils in the Bannock-Oneida area have already been affected by past use. Grazing at intensities that have historically occurred affects compaction, productivity and soil erosion. Heavy grazing increases bulk density and decreases pore space, thus decreasing infiltration rates. The decreased infiltration rates from the compacted soil result in increased runoff, which increases the potential for soil erosion. Rauzi and Hanson (1966) found that infiltration rates and runoff are affected significantly by the intensity of grazing. Packer (1961) indicated that cattle trampling significantly increases soil erosion (through increased soil compaction and runoff) unless there is a 60-70 percent plant and litter cover to provide watershed protection against intensive summer storms. Depleted plant cover and trampled soils are two main factors that contribute to soil erosion of range lands (Meehan and Platts 1978). Soil erosion affects the area being eroded as well as the receiving waters of the eroded material. Erosion affects the topsoil, where most of the nutrients and organic material are found, reducing the fertility of the eroded soil. Sediment and nutrients can adversely affect water quality, fish habitat and reservoirs.

Soils occurring around proposed water troughs and reservoirs vary in depth, texture, permeability and *bulk density* and are presently close to their original undisturbed condition. This is due to the light grazing they have generally received in the past.

Some local areas of heavy livestock use presently occur around existing water troughs, riparian areas, salt licks, valley flats, and shady areas. These areas have been highly compacted and moderately eroded, which has resulted in soils with higher bulk densities and lower organic matter content, pore space, infiltration and productivity. Areas of decreased vegetation and litter cover are also more susceptible to erosion.

Soil erosion is the process of soil particle detachment and subsequent removal. Productivity of the eroded site and related quality of the drainage waters may be adversely affected by soil erosion. Erosion rates are a function of many factors, predominantly the slope steepness and length, amount of bare ground, rainfall intensity and soil erodibility. Table 4-1 shows the maximum potential erosion rates that have been estimated for each allotment, using the *Musgrave equation* described in the BLM Manual 7317 (see Appendix D for methodology). The Musgrave equation calculates the amount of soil movement on the landscape.

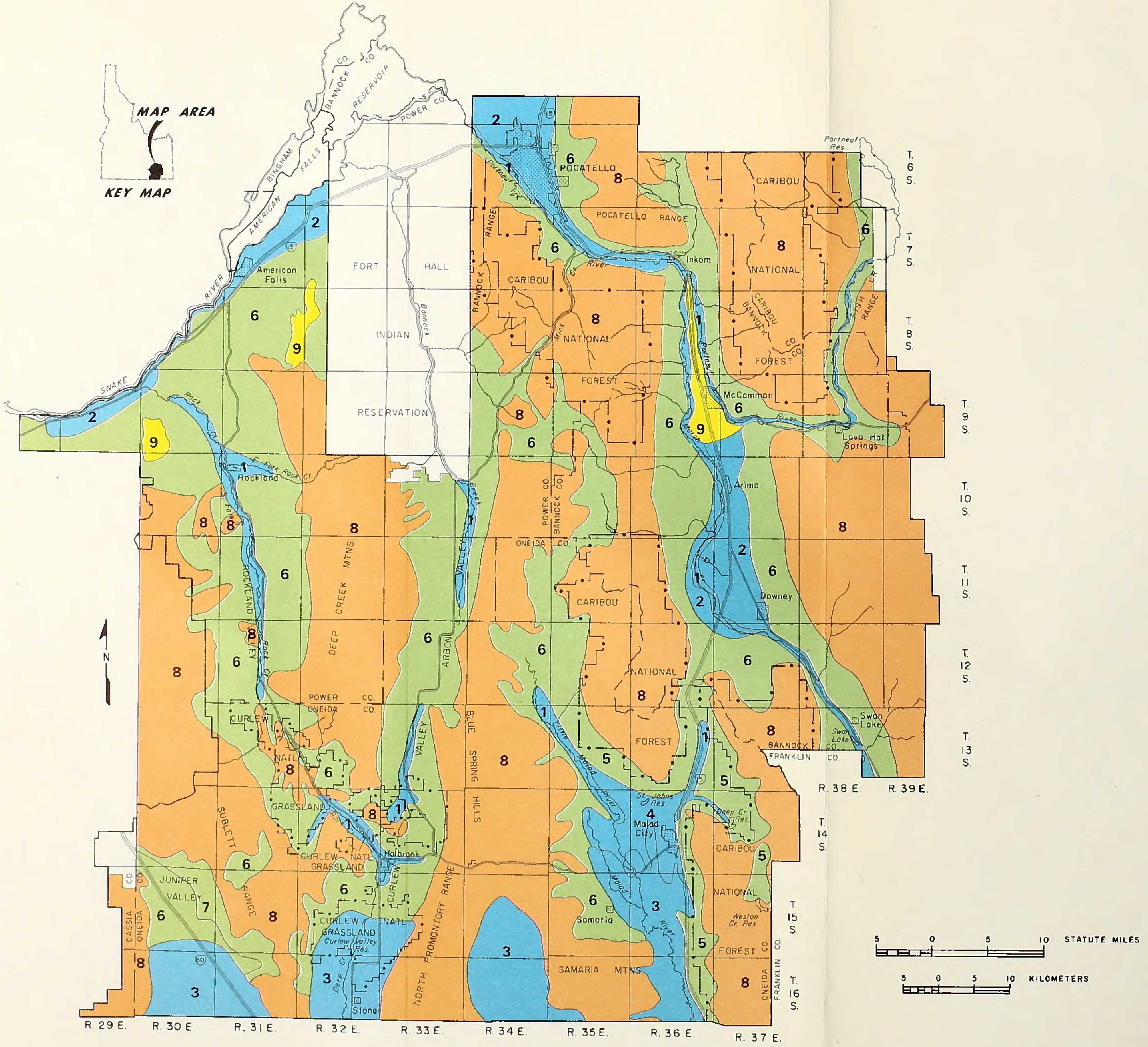
Erosion condition classes for the allotments, based on *Soil Surface Factors* (BLM Manual 7317), are shown on Map 3-3. These classes--stable, slight, moderate, critical and severe--are developed from field observations which include checking for soil movement, surface litter, gullies and flow patterns. In the EIS area no severe erosion condition class was indicated. Critical erosion condition classes were identified mainly in the Curlew Allotment and in allotments in Bannock County. Also indicated on Map 3-3 are estimated *erosion trends* for the next 15 years. Areas showing increasing erosion trends are scattered throughout the EIS area, but most allotments show a static trend.

II. WATER RESOURCES

The EIS area is part of two major basins--the upper Snake River Basin on the north and the Great Basin to the south. Total estimated runoff from the EIS area is near 380,000 *acre-feet,* which is equivalent to about 2-3 inches of

MAP 3–2

GENERAL SOIL ASSOCIATION



LEGEND

🟦 SOILS ON BOTTOM LANDS AND LOW FANS AND TERRACES

1. STREAM BOTTOM AND RECENT ALLUVIAL SOILS
2. ALLUVIAL FAN AND LOW TERRACE SOILS
3. LOW LAKE TERRACE SOILS
4. POORLY DRAINED LACUSTRINE SOILS

🟩 SOILS ON UPLANDS AND HIGH TERRACES

5. COLLUVIAL AND ALLUVIAL SOILS WITH HEAVY SUBSOILS
6. LOESS INFLUENCED SOILS
7. ALLUVIAL AND LACUSTRINE SOILS

🟧 SOILS ON FOOTSLOPES AND MOUNTAINSIDES

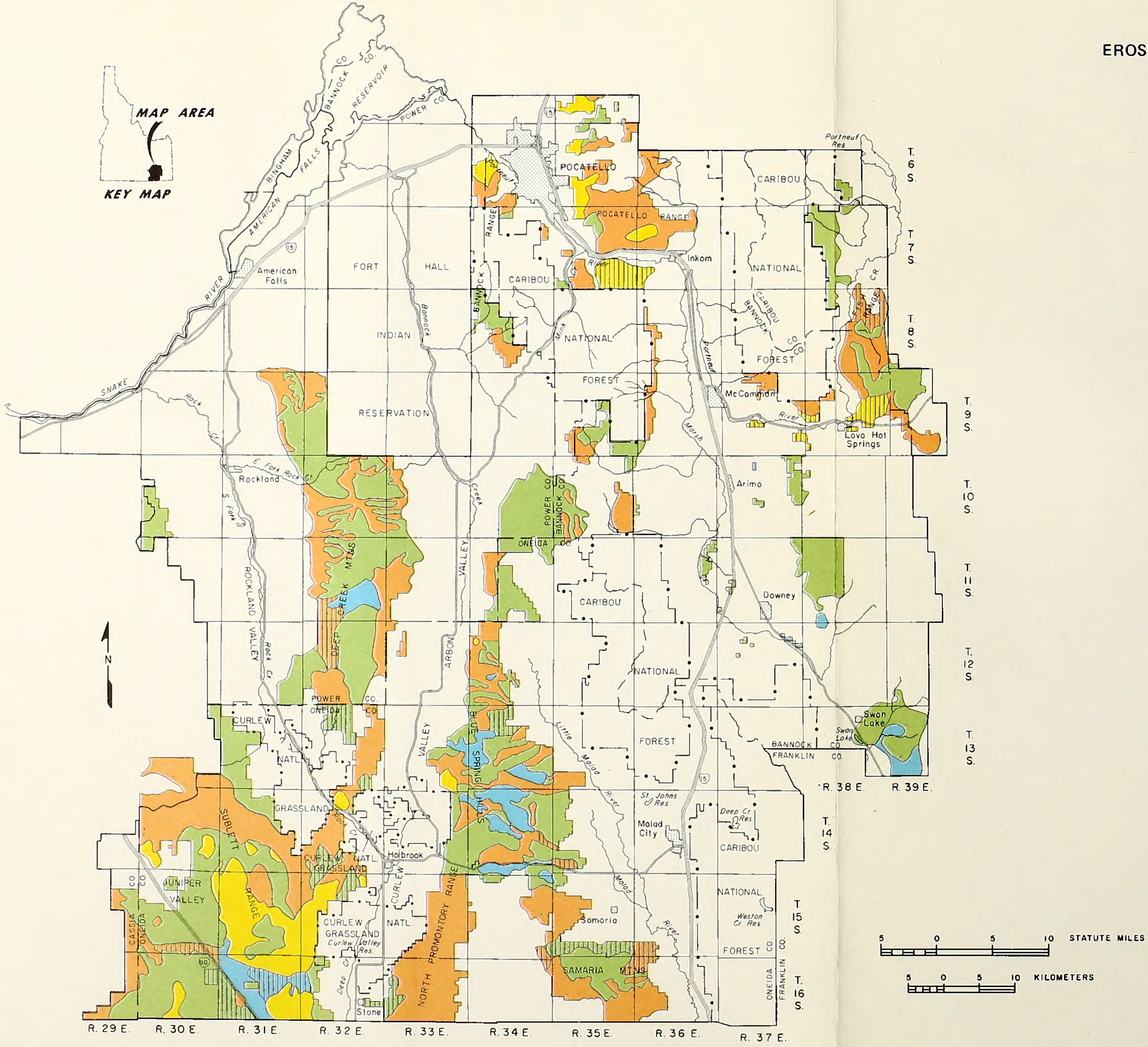
8. COLLUVIUM AND RESIDUUM SOILS

🟨 SOILS OVER BASALT AND BARE LAVA FLOWS

9. LOESS AND WEATHERED BASALT INFLUENCED SOILS

MAP 3–3

EROSION CONDITION CLASS AND FUTURE EROSION TREND



LEGEND

EROSION CONDITION CLASS		SSF VALUE
🟦	STABLE	0–20
🟩	SLIGHT	21–40
🟧	MODERATE	41–60
🟨	CRITICAL	61–80
☐	UNCLASSIFIED AREAS	---

FUTURE TREND (ESTIMATED SSF CHANGE WITHIN 15 YEARS)

▥	INCREASING EROSION
▤	DECREASING EROSION
☐	STATIC EROSION

water spread over the entire area (Water Resources Council 1968, U.S. Geological Survey 1977). Because of the relatively low precipitation and high evaporation, little water is available to surface and ground water systems.

Within the two major basins there are five main drainages, four of which originate entirely within the EIS area (see Map 3-4). Draining to the Great Basin are the Deep Creek (419,000 acres) and Malad River basins (332,000 acres). Draining to the Snake River are the Rock Creek (211,000 acres), Bannock Creek (333,000 acres) and Portneuf River basins (653,000 acres, 637,000 of them in the EIS area).

The largest water user in the EIS area is agriculture, which consumes over 100,000 acre-feet annually (estimated from Pluhowski 1970, Idaho Department of Water Resources 1975, USGS 1977). Other uses include domestic and public drinking water, industry and livestock. Livestock on the public land consume about 85 acre-feet annually. Although water supply for livestock is generally adequate, distribution of the available water is a considerable problem on the public lands, particularly on the Curlew, Pleasantview, Samaria, Big Onion, Dairy Creek, Black Rock and Inkom Allotments.

Watershed Condition

Characteristics which determine overall watershed condition include soil sheet erosion, sediment yield, infiltration, runoff response and vegetative cover. Soil sheet erosion is discussed in the Soils section. Sediment yield, unlike soil sheet erosion, is that portion of sediment transported in stream channels. It may include soils made available through a sheet erosion process, but also includes soil eroded in the stream channel. Generally, most sediment is transported during the spring runoff as a result of higher *discharges*, although other occurrences such as flooding can cause substantial sediment yields. These large, fluctuating discharges and other complicating factors make it difficult to measure sediment yield. For present purposes, sediment yield estimates were made using the Pacific Southwest Interagency Committee's method (PSIAC 1968), which evaluates geology, soil, climate, topography, land use, ground cover, upland erosion and channel erosion. A numerical rating was then converted to a sediment yield factor. Basic values generated through this method are not presented here because of the large possibility of error, but the comparative values will be used in the impact sections in Chapter 4. Johnson and Gebhardt (1979) have shown the PSIAC method to be useable in comparative analysis on a southwestern Idaho watershed.

Sediment loads have been shown to be greatly increasing and are considered the major problem within the Portneuf River basin and Bannock County (Roberts 1977). Roberts reported that the largest sources of sediments are nonirrigated cropland representing 76 percent of the total sediment yield, channel erosion accounting for 8 percent, irrigated cropland accounting for 7 percent and range land accounting for 6 percent. This would indicate that sediment production from nonirrigated cropland is over ten times that of range land.

The Power Soil Conservation District (1976) reported Rock Creek had an overall sediment yield which amounted to 20 tons/acre or over 500,000 tons entering the Snake River annually. This figure, unless grossly inaccurate, suggests that sediment is the primary water quality problem in this portion of the EIS area.

Important causes of sediment problems on range land include roads, trails and overgrazing. Another important type of erosion is seen in stream banks where unstable, exposed soil is easily eroded by the moving water. An Idaho Fish and Game study (Reininger 1978) identified 56 percent of the useable fisheries habitat on public land as being in fair or poor condition (see Table 3-7), owing in large part to extensive streambank damage and sediment problems. No extensive information is available to quantify the channel erosion, but Roberts indicates that the contribution of sediment from the stream channels is more significant than that originating from the range land. The BLM has management control on about 10 percent of the 300-plus miles of perennial stream in the EIS area. Assuming that the Roberts study is applicable to all of the EIS area, this indicates that less than 1 percent of the channel sediment problem and less than 10 percent of the total sediment problem is associated with public lands.

The areas outlined on Map 3-5 were found to be the areas most susceptible to high erosion rates and resulting increases of sediment loads in rivers and streams. Activities causing reductions in vegetation or disturbance of soil on those areas can greatly increase the erosion hazard because of increased soil exposure and susceptibility to water and wind action. Also indicated on Map 3-5 and Map 3-13 are the major water resources within the EIS area. They include Little Malad River, King Creek, Goodenough Creek, Upper Rock Creek, Portneuf River, Rapid Creek, Crystal Creek, Midnight Creek, Garden Creek, Mink Creek, Hawkins Creek, Marsh Creek, Moonlight Creek, Rapid Creek, Bell Marsh Creek, Crystal Springs, Robber's Roost Creek, Stockton Creek, Lefthand Fork Marsh Creek and Wiregrass Reservoir.

Surface runoff, the major cause of serious flooding, is also an important factor causing "surface sheet erosion," which is soil erosion resulting from the movement of surface water. Runoff is basically dependent upon the amount and rate of water movement on the soil surface and upon the permeability and slope of the soil itself. "Infiltration" is the term used to describe the relative capacity of the soil to hold or pass water. When the infiltration capacity is exceeded, surface runoff results. Factors important to the infiltration capacity include soil type, bulk density (compaction), vegetative cover and organic content. Precipitation in various forms has different effects on infiltration and runoff. Very intense rainstorms, rain on frozen soil or rain on snowpack can quickly bring the soil to infiltration capacity and produce runoff with peak discharges as opposed to the smaller peaks produced by low intensity showers. Livestock grazing influences runoff by altering the vegetative cover and soil compaction.

Values for runoff are not presented here for reasons similar to those concerning sediment yield. Comparative analysis presented in the impact sections used the Soil Conservation Service's curve number method (BLM Manual 7315) for evaluating runoff. No data on infiltration is widely available in the EIS area, though Gifford (1979) has studied infiltration in the Curlew Valley area. Infiltration responses were evaluated on a very general level, using a crude technique developed by Hawkins and Gifford (1979).

Water Quality

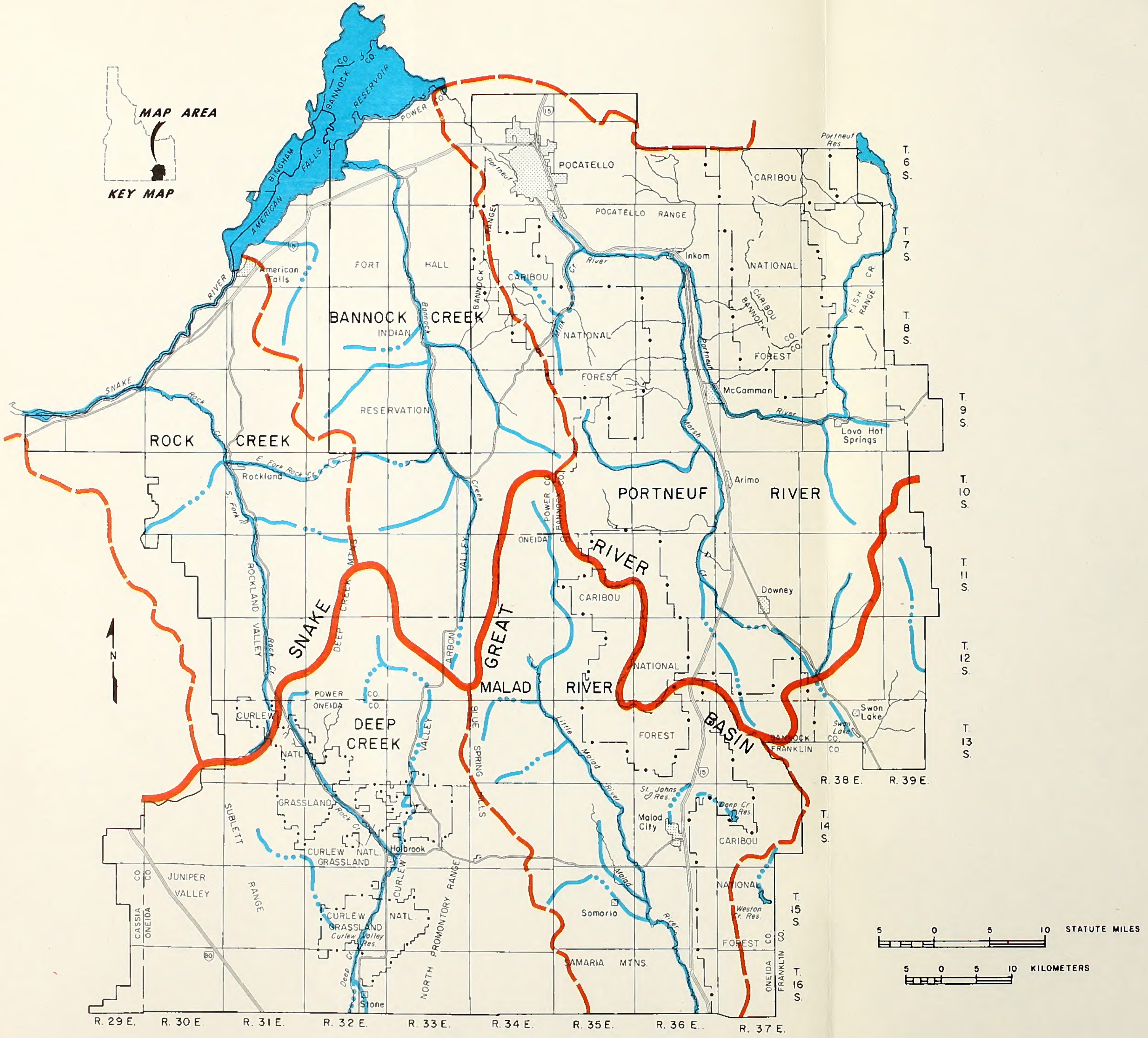
Bauer et al. (1978) noted that temperature, bacteria and nutrient (nitrogen and phosphorus) levels in the Portneuf River fail to meet standards of the State of Idaho. Point source pollution (pollution originating from a discrete source) was attributed to sewage treatment works. Major non-point sources of pollution were identified as Marsh Creek, various hot springs and farm land (McSorley 1977).

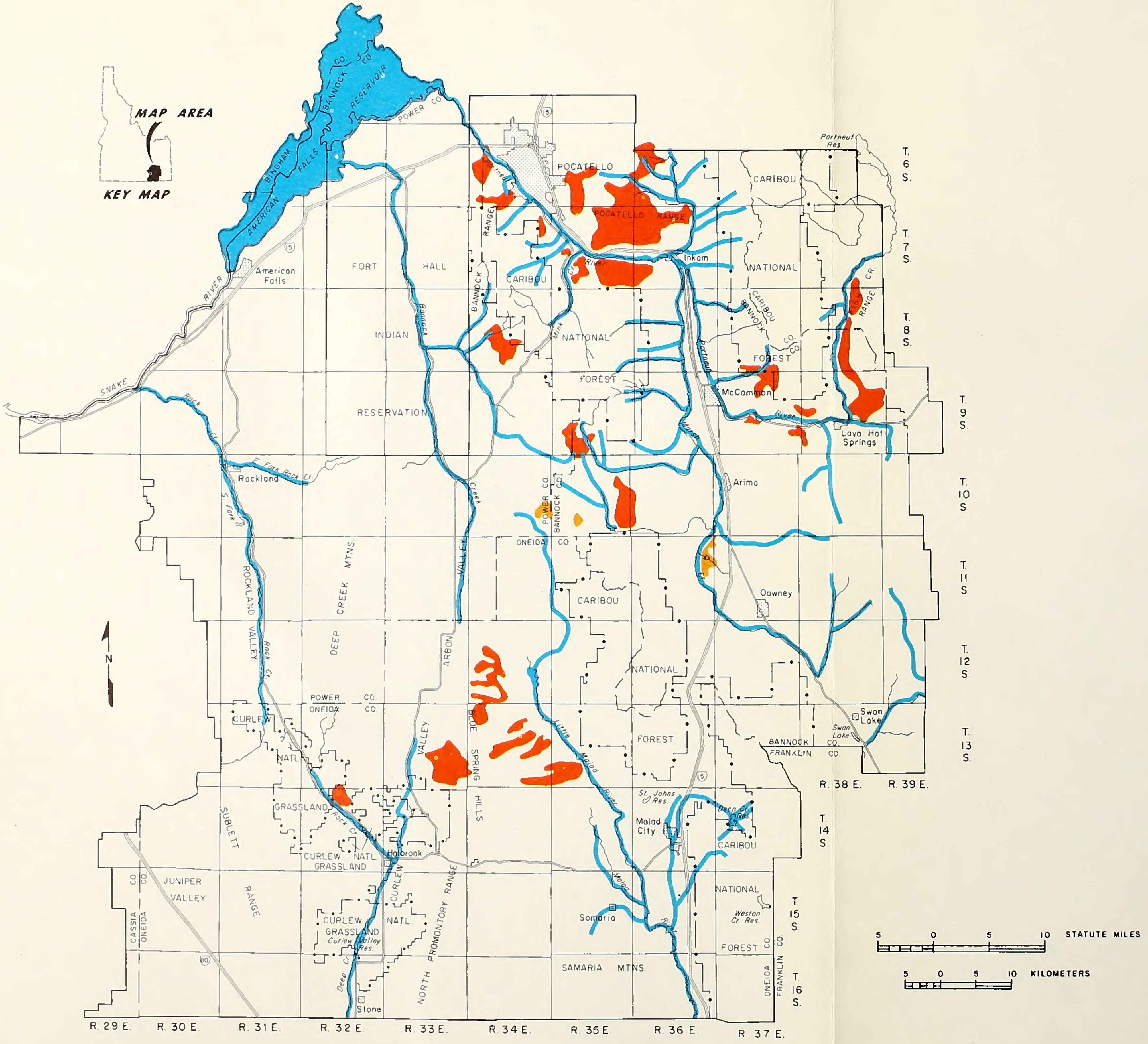
MAP 3–4

WATERSHED

LEGEND

▬	REGIONAL BOUNDARY
▬	HYDROLOGIC UNIT BOUNDARIES, DRAINAGE
- - -	CATALOGING UNIT, SUBDRAINAGE





MAP 3–5

WATER RESOURCES POTENTIAL AREAS OF IMPACT

LEGEND

🟥	AREAS HAVING A HIGH EROSION-SEDIMENT HAZARD
🟧	OTHER AREAS WHERE SURFACE ACTIVITIES MAY IMPACT WATER RESOURCES

Water quality data over the rest of the EIS area is limited to major constituents such as calcium and bicarbonate; unfortunately, little data exists on bacteria, nutrients and suspended sediments, which are residuals of livestock grazing. Bacterial pollution and increased nutrient levels have been associated with livestock when grazing takes place in close proximity to streams (Kunkle 1970, Buckhouse and Gifford 1976, Stephenson 1979). No bacteria or nutrient sampling has been done on the public lands in the EIS area to identify any problems associated with livestock grazing.

It appears that existing activities on the public lands are not seriously affecting the regional water quality. Other uses such as agriculture are the major sources of water quality problems. There may be localized problems concerning watershed characteristics on public land, but no data is available to identify problem areas other than the few already mentioned.

III. VEGETATION

Vegetation Types

The Bannock-Oneida EIS area has eight major vegetation types: sagebrush, juniper, mountain shrub, grass, aspen, maple, Douglas fir and greasewood. Each vegetation type (see Table 3-1) is based on differences in the proportions and kinds of plant species that predominate in a specified location. In the case of the Bannock-Oneida EIS area, determination of vegetation types was based on data from a 1977-78 inventory done according to the *Ecological Site Inventory Method (ESIM)*. Table 3-2 shows the acreage, and Map 3-6 the location, of each vegetation type in the EIS area.

Riparian Vegetation

The EIS area has approximately 146 acres of riparian vegetation consisting of willow, rose, carex, cattail and grass. Riparian vegetation in the EIS area is found in the canyon bottoms along perennial streams, frontage on reservoirs and spring locations.

Any source of water is a congregation place for livestock. Because of this, livestock have had a pronounced adverse effect on the riparian vegetation, not only from the utilization standpoint but also through trampling.

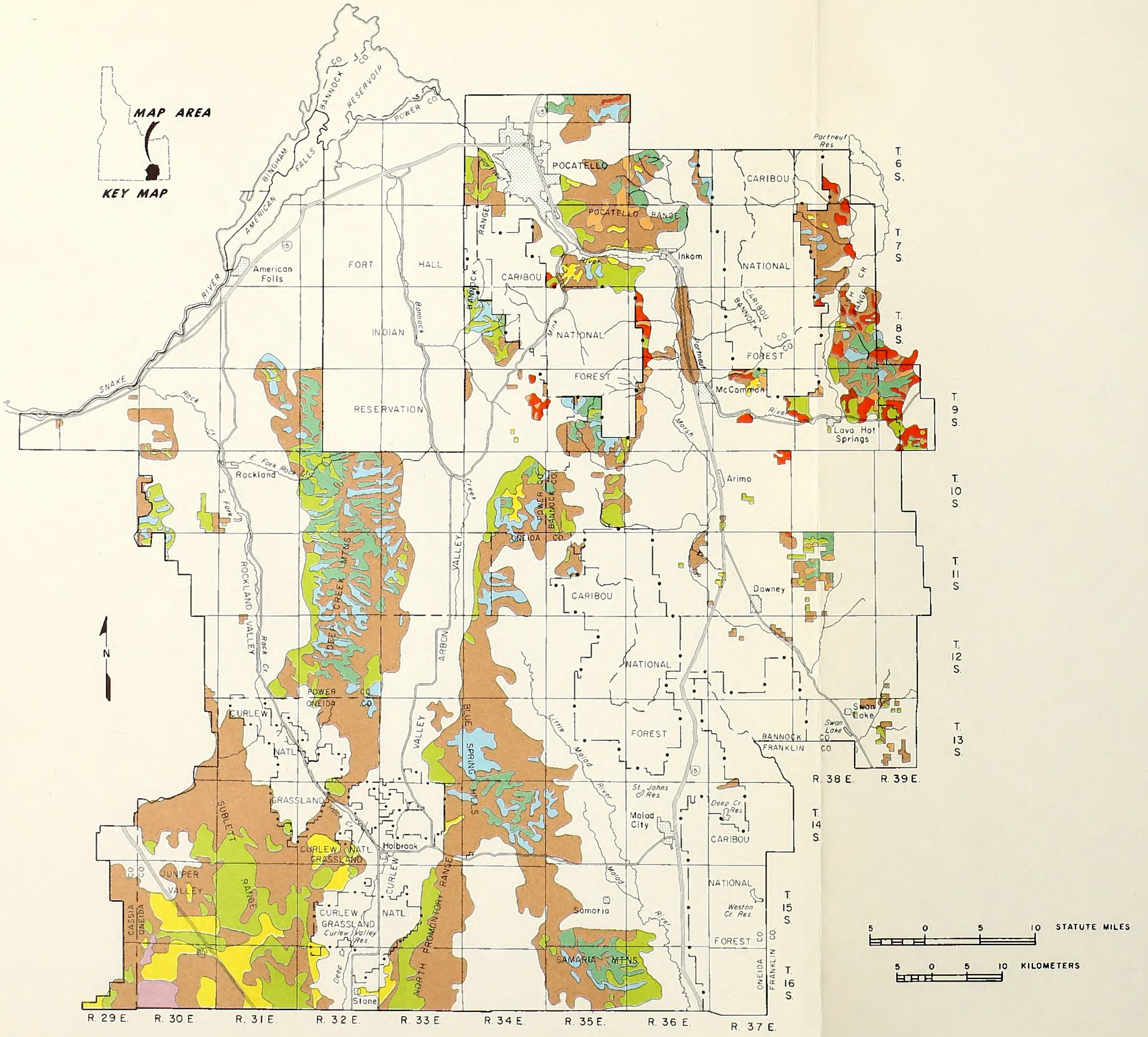
Threatened or Endangered Plants

During the summer of 1978, the Bannock-Oneida EIS area was inventoried for threatened or endangered plant species. Although one proposed threatened species (Davis thistle) was identified in the area, researchers who conducted the inventory concluded that this widely distributed species was in no imminent danger. According to Dr. Stanley L. Welsh, Professor of Botany at Brigham Young University, "There is little to suggest that the future of endangered or threatened plants in the Bannock-Oneida region is being threatened by grazing per se. Both sheep and cattle were observed in areas where Davis

Table 3-1

Plants Commonly Found in the Major Vegetation Types

MAJOR VEGETATION TYPE	GRASSES	FORBS	SHRUBS & TREES
Sagebrush	Bluebunch wheatgrass Kentucky bluegrass Prairie junegrass Sandberg bluegrass Western wheatgrass Nevada bluegrass Basin wildrye Indian ricegrass Japanese bromegrass Mountain bromegrass Cheatgrass Sand dropseed	Mule's ear wyethia Balsamroot Fernleaf biscuitroot Louisiana sagewort Busby birdbeak Spurge Longleaf arnica Yarrow Desert alyssum Toadflax	Mountain big sagebrush Antelope bitterbrush Threetip sagebrush Black sagebrush Basin big sagebrush Common snowberry Prickly pear cactus Oregon grape Tall green rabbitbrush Broom snakeweed Greasewood Serviceberry Buckwheat
Juniper	Bluebunch wheatgrass Crested wheatgrass Cheatgrass Western wheatgrass Sandberg bluegrass Indian ricegrass Japanese bromegrass Needlegrass	Balsamroot Busby birdbeak Low penstemon Phlox Goldenrod Larkspur	Black sagebrush Utah juniper Threetip sagebrush Antelope bitterbrush Curlleaf mountain mahogany Broom snakeweed Basin big sagebrush Mountain big sagebrush Common snowberry Tall green rabbitbrush Rubber rabbitbrush
Mountain Shrub	Kentucky bluegrass Nevada bluegrass Bluebunch wheatgrass Prairie junegrass Sandberg bluegrass Western wheatgrass Mountain bromegrass Basin wildrye Needlegrass	Geranium Groundsel Balsamroot Mule's ear wyethia	Serviceberry Common chokecherry Common snowberry Threetip sagebrush Antelope bitterbrush Mountain big sagebrush Curlleaf mountain mahogany Aspen
Grass	Crested wheatgrass Bluebunch wheatgrass Cheatgrass Nevada bluegrass Indian ricegrass Intermediate wheatgrass Mountain bromegrass	Twolobe speedwell Fleabane Phlox Desert alyssum Halogeton Russian thistle	Mountain big sagebrush Tall green rabbitbrush Broom snakeweed Rubber rabbitbrush
Aspen	Kentucky bluegrass Canada wildrye Pine reedgrass Basin wildrye Western wheatgrass Slender wheatgrass	Groundsel Dandelion Geranium Larkspur	Serviceberry Common snowberry Aspen Rocky Mountain maple Wood's rose Snowbrush ceanothus Mrytle pachistima
Maple	Kentucky bluegrass Canada wildrye Nevada bluegrass Sandberg bluegrass Desert needlegrass Prairie junegrass	Yarrow Toadflax Fender meadowrue Larkspur Mule's ear wyethia Bedstraw Spreading sweetroot	Rocky Mountain maple Serviceberry Common chokecherry Aspen Common snowberry Myrtle pachistima Oregon grape
Douglas fir	Pine reedgrass Carex Kentucky bluegrass Needlegrass Basin wildrye	Sweetanice sweetroot Spreading sweetroot Rose pussytoes Bracted strawberry Toadflax Hound's tongue Heartleaf arnica Fender meadowrue Marsh violet Smallflower miterwort Blue-eyed Mary Dandelion	Douglas fir Common chokecherry Rocky Mountain maple Common snowberry Oregon grape Myrtle pachistima
Greasewood	Crested wheatgrass	Russian thistle Halogeton Globe mallow	Greasewood Shadscale



MAP 3–6

MAJOR VEGETATION TYPES

LEGEND

🟫 SAGEBRUSH
🟩 JUNIPER
🟥 MOUNTAIN SHRUB
🟨 GRASS
🟦 ASPEN
🟧 MAPLE
🟩 DOUGLAS FIR
🟪 GREASEWOOD

Table 3-2

Acreages by Vegetation Types

Allotment	Sagebrush Acres	Juniper Acres	Mountain Shrub Acres	Grass Acres	Aspen Acres	Maple Acres	Douglas fir Acres	Greasewood Acres	Total Acreage
Section 3									
Houtz Canyon	293	1,494	. . .	. . .	1,180	. . .	. . .	. . .	2,967
Table Montain	830	210	. . .	. . .	. . .	. . .	. . .	. . .	1,040
Cedar Ridge	130	470	. . .	. . .	. . .	. . .	. . .	. . .	600
Side Canyon	120	. . .	. . .	. . .	. . .	. . .	. . .	. . .	120
Cold Water	152	. . .	. . .	. . .	. . .	. . .	. . .	. . .	152
Register Rock	80	. . .	. . .	. . .	. . .	. . .	. . .	. . .	80
Rock Creek	400	. . .	. . .	. . .	. . .	. . .	. . .	. . .	400
Curlew	81,903	31,660	. . .	22,090	. . .	. . .	. . .	3,420	139,073
South Stone	3,991	4,217	. . .	3,754	. . .	. . .	. . .	. . .	11,962
South Bull	4,111	558	. . .	. . .	216	. . .	53	. . .	4,938
Pleasantview	43,597	3,304	. . .	489	7,175	. . .	4,461	. . .	59,026
Samaria	12,861	7,024	. . .	. . .	1,078	. . .	4,320	. . .	25,283
Walker	426	80	. . .	. . .	46	. . .	. . .	. . .	552
Madsen	(Included in Samaria Allotment)								
Hanzel Mountain	12,275	38	. . .	. . .	. . .	. . .	. . .	. . .	12,313
Big Onion	2,919	2,120	. . .	160	1,521	. . .	330	. . .	7,050
Cedar Mountain	907	1,094	. . .	. . .	. . .	. . .	. . .	. . .	2,001
Dairy Creek	2,450	. . .	. . .	. . .	870	. . .	. . .	. . .	3,320
East Daniels	. . .	. . .	. . .	. . .	120	. . .	. . .	. . .	120
Deep Creek	161	. . .	. . .	. . .	. . .	. . .	. . .	. . .	161
East Fork	1,970	2,530	. . .	. . .	340	. . .	2,520	. . .	7,360
Roy Arbon	22,117	5,553	. . .	. . .	8,978	. . .	9,408	. . .	46,056
Indian Springs	3,439	1,461	. . .	. . .	1,289	. . .	4,218	. . .	10,407
Black Rock	7,088	1,315	. . .	560	. . .	1,756	422	. . .	11,141
Michaud Creek	2,660	1,555	. . .	. . .	. . .	. . .	. . .	. . .	4,215
2½ Mile	1,507	367	83	. . .	171	. . .	490	. . .	2,618
Moonlight Mine	1,224	12	. . .	27	328	171	461	. . .	2,223
Rapid Creek	2,346	31	. . .	53	21	162	438	. . .	3,051
Inkom	1,898	2,542	1,071	. . .	. . .	. . .	. . .	. . .	5,511
Stanger	15	533	. . .	. . .	. . .	. . .	. . .	. . .	548
Shoestring	970	76	367	. . .	309	540	19	. . .	2,281
Bullock	174	. . .	. . .	. . .	. . .	21	. . .	. . .	195
Goodenough	23	. . .	. . .	. . .	. . .	. . .	. . .	. . .	23
McCammon	380	1,227	591	481	. . .	389	180	. . .	3,248
Price	38	. . .	227	. . .	. . .	. . .	. . .	. . .	265
Toponce	2,167	. . .	1,698	251	175	. . .	. . .	. . .	4,291
Hebdon	366	. . .	303	3	108	11	. . .	. . .	791
Taylor	195	. . .	194	7	15	. . .	. . .	. . .	411
Bancroft	1,929	917	3,323	447	1,758	110	2,516	. . .	11,000
Wistisen	135	. . .	80	. . .	. . .	. . .	. . .	. . .	215
Fish Creek	1,031	666	57	. . .	. . .	766	30	. . .	2,550
Rowsell	. . .	40	. . .	. . .	. . .	. . .	. . .	. . .	40
Lund	807	916	2,192	. . .	. . .	99	1,555	. . .	5,569
Crystal	809	2,759	. . .	. . .	1,469	. . .	203	. . .	5,240
Swim	281	. . .	. . .	. . .	. . .	. . .	. . .	. . .	281
Tate Individual	80	. . .	. . .	. . .	. . .	. . .	. . .	. . .	80
Myler	. . .	. . .	120	. . .	. . .	. . .	. . .	. . .	120
Garden Creek	179	. . .	113	65	. . .	. . .	. . .	. . .	357
Stewart Individual	. . .	. . .	630	. . .	. . .	358	. . .	. . .	988
Soloago	1,355	. . .	. . .	73	783	. . .	1,227	. . .	3,438
Rogers Individual	484	44	. . .	76	153	54	1	. . .	812
Hatley	31	160	. . .	38	. . .	. . .	. . .	. . .	229
Preslar Individual	40	. . .	. . .	. . .	. . .	. . .	. . .	. . .	40
Rocks	499	. . .	. . .	. . .	. . .	. . .	. . .	. . .	499
Johnson	65	755	. . .	. . .	294	. . .	. . .	. . .	1,114
Anderson	1,061	1,090	. . .	. . .	71	. . .	138	. . .	2,360
Howe	80	. . .	. . .	. . .	. . .	. . .	. . .	. . .	80
Section 3 Subtotal	225,049	76,818	11,049	28,574	28,468	4,437	32,990	3,420	410,805
Section 15									
L. Allen	263	257	. . .	. . .	. . .	. . .	. . .	. . .	520
B. Almond	53	. . .	. . .	. . .	. . .	. . .	. . .	. . .	53
T. Bloxham	80	. . .	. . .	. . .	. . .	. . .	. . .	. . .	80
A. Brady	40	. . .	. . .	. . .	. . .	. . .	. . .	. . .	40
C. Criddle	. . .	40	. . .	. . .	. . .	. . .	. . .	. . .	40
Cambridge	767	379	20	. . .	. . .	. . .	341	. . .	1,507
N. Casperson	58	263	. . .	. . .	. . .	119	. . .	. . .	440
Criddle & Sons	291	136	. . .	. . .	. . .	. . .	137	. . .	564
R. Davis	340	. . .	. . .	. . .	. . .	. . .	. . .	. . .	340
Egan	595	40	. . .	. . .	. . .	. . .	. . .	. . .	635
Cottonwood	466	454	. . .	. . .	. . .	. . .	. . .	. . .	920
A. Evans	. . .	200	. . .	. . .	. . .	. . .	. . .	. . .	200
W. Fuhriman	. . .	40	. . .	. . .	. . .	. . .	. . .	. . .	40
D. Hadley	26	. . .	. . .	54	. . .	. . .	. . .	. . .	80
Hatley	74	40	. . .	. . .	. . .	. . .	. . .	. . .	114
G. Jensen	. . .	33	. . .	. . .	. . .	. . .	. . .	. . .	33
S. Kent	95	. . .	. . .	. . .	. . .	. . .	. . .	. . .	95
Larson	40	. . .	. . .	. . .	. . .	. . .	. . .	. . .	40
McNee	160	. . .	. . .	. . .	. . .	. . .	. . .	. . .	160
Marley	240	14	. . .	. . .	. . .	. . .	. . .	. . .	254
P. Morrison	110	10	. . .	. . .	. . .	. . .	. . .	. . .	120
W.T. Evans	240	. . .	. . .	. . .	. . .	. . .	. . .	. . .	240
Right Hand Grazing Assoc.	404	196	. . .	. . .	. . .	. . .	. . .	. . .	600
Salveson	661	296	. . .	. . .	. . .	385	177	. . .	1,519
Servoss Brothers	. . .	. . .	. . .	200	. . .	. . .	. . .	. . .	200
Thompson	189	310	73	. . .	. . .	. . .	768	. . .	1,340
Tippits	17	32	16	. . .	. . .	. . .	. . .	. . .	65
L. Roberts	. . .	120	. . .	. . .	. . .	. . .	. . .	. . .	120
Section 15 Subtotal	5,209	2,860	109	254	. . .	504	1,423	. . .	10,359
Sec. 3 & Sec. 15 Total	230,258	79,678	11,158	28,828	28,468	4,941	34,413	3,420	421,164
	(54%)	(19%)	(3%)	(7%)	(7%)	(1%)	(8%)	(1%)	(100%)

thistle occurs. In no event were they observed to eat this plant, which is armed with sharp spines." Dr. Welsh further indicates that Davis thistle is the most common native thistle in the Bannock-Oneida region. This plant is not being threatened by existing management practices and would not be threatened by any of the management alternatives here under consideration. Accordingly, there will be no further discussion of threatened or endangered plants in this document.

Condition

Vegetation within the study area would respond to the various alternatives in various ways. These responses can be assessed in terms of projected changes in condition, trend and production.

Range condition describes the existing vegetative composition of an area in relation to the climax (natural potential) plant community for the area. It is an expression of the relative degree to which the kinds, proportions and amounts of plants in a plant community resemble the climax community. Range condition can be considered an ecological rating of the plant community, although on most areas it is unlikely that the ecological potential will ever be fully attained.

Condition data for the EIS area was collected as part of the 1977-78 ESIM inventory. Most range land was evaluated in accordance with ecological principles as discussed above, but seeding project areas (21,380 acres) were assessed only in terms of their grazing condition: 8,580 acres were rated as good, 12,400 acres as fair and 400 acres as poor. Another 4,809 acres of seedings had essentially reverted to native vegetation and were therefore evaluated by the same criteria as unseeded areas. Table 3-3 and Map 3-8 summarize the existing condition (good, fair or poor) of all allotments in the EIS area.

Studies by Hyder and Sawyer (1951), Leithead (1960) and Heady (1961) suggest that a given area, if improving or declining, changes by one condition class over a period of 15 years if management remains constant. Management variables--e.g., stocking adjustments, revised grazing systems, land treatments or whatever--likewise bring about changes in range condition if those managerial changes are of sufficient magnitude to affect range trend.

Trend

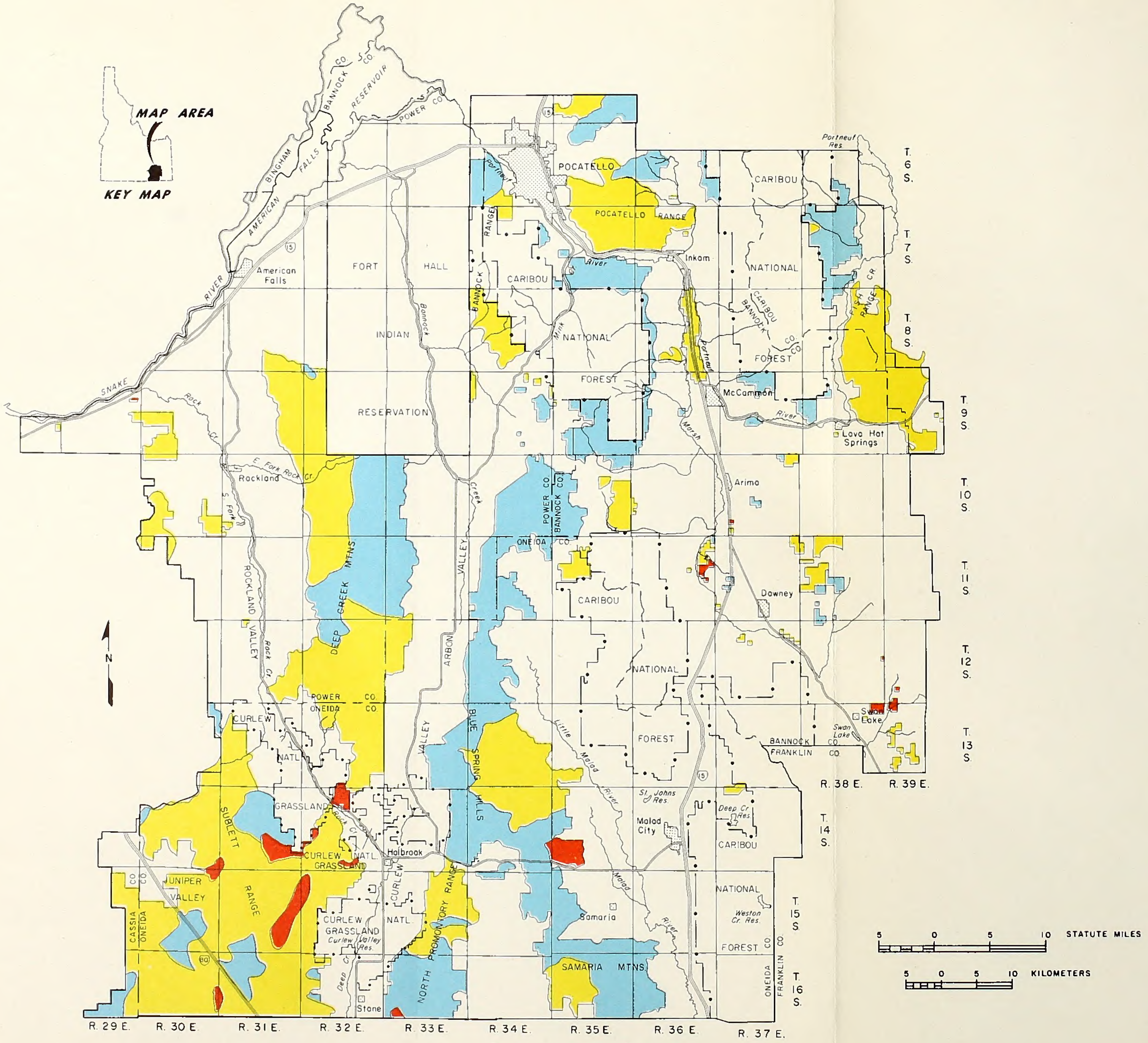
Range trend refers to changes in vegetation and soil characteristics resulting directly from climatic and other natural factors and from grazing intensity.

Three techniques *(plot trend, Parker 3-step,* and *apparent trend)* were used to determine trend. The apparent trend data was collected as part of the 1977-78 ESIM inventory. Both the Parker 3-step and plot trend are permanently marked, continuing studies which are read on a periodic basis. These long-term studies provide needed supplementation, since the apparent trend data collected by ESIM is only a single year's data.

All data available for an allotment was evaluated before assigning a trend rating to any allotment or portion of an allotment. Table 3-3 and Map 3-7 show trends on public land in the EIS area.

Production

The present total biomass production (392,452,758 pounds) on the EIS area is shown by allotment in Table 2-3. This was determined from a 1977-78



MAP 3–7

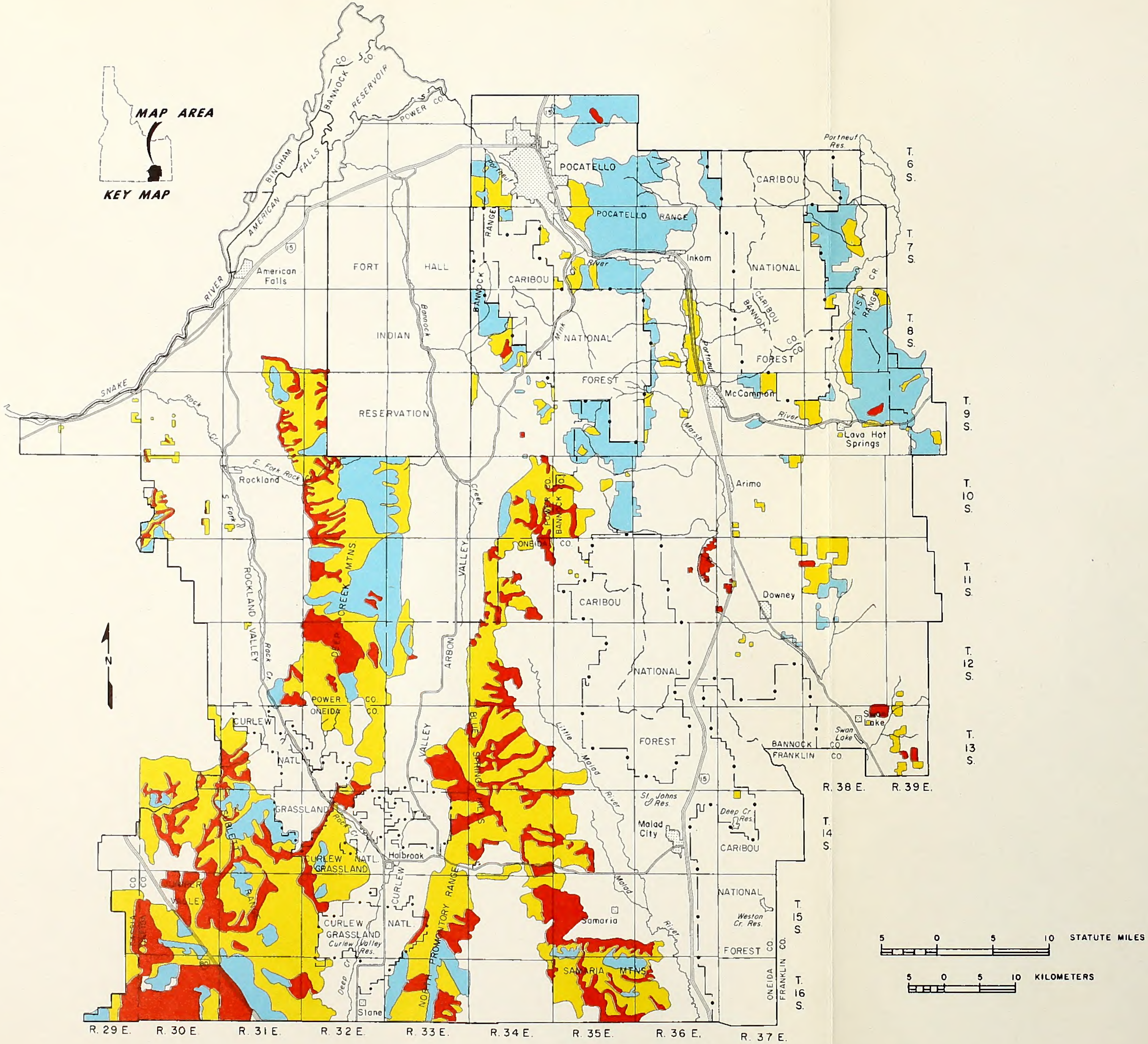
RANGE TREND

LEGEND

🟥 DOWNWARD

🟨 STATIC

🟦 UPWARD



MAP 3–8

RANGE CONDITION

LEGEND

🟦 GOOD

🟨 FAIR

🟥 POOR

Table 3-3

Present Range Condition Trend and Suitability

Allotment	Public Land Acreage	Condition (acres)			Trend (acres)			Suitability (acres)	
		Good	Fair	Poor	Improving	Static	Declining	Suitable	Unsuitable
Houtz Canyon	2,967	722	1,628	617	. . .	2,967	. . .	843	2,124
Table Mountain	1,040	. . .	925	115	. . .	1,040	. . .	1,040	. . .
Cedar Ridge	600	. . .	550	50	. . .	600	. . .	570	30
Side Canyon	120	. . .	120	. . .	. . .	120	. . .	120	. . .
Cold Water	152	. . .	152	. . .	. . .	152	. . .	152	. . .
Register Rock	80	. . .	80	. . .	. . .	. . .	80	80	. . .
Rock Creek	400	. . .	400	. . .	. . .	400	. . .	400	. . .
Curlew *	139,073	15,484	85,607	37,982	20,050	111,392	7,631	120,473	18,600
South Stone*	11,962	5,108	5,152	1,702	3,258	8,704	. . .	11,698	264
South Bull	4,938	. . .	4,938	. . .	. . .	4,938	. . .	4,435	503
Pleasantview *	59,026	. . .	41,210	17,816	34,467	23,166	1,393	42,708	16,318
Samaria	25,283	1,664	15,351	8,268	20,723	4,560	. . .	16,422	8,861
Walker	552	. . .	486	66	. . .	552	. . .	251	301
Madsen	(Included in Samaria Allotment)								
Hanzel Mountain	12,313	2,744	4,830	4,739	8,699	3,614	. . .	9,454	2,859
Big Onion	7,050	45	6,639	366	7,050	. . .	. . .	6,564	486
Cedar Mountain	2,001	2,001	. . .	. . .	. . .	2,001	. . .	1,986	15
Dairy Creek	3,320	. . .	2,202	1,118	3,320	. . .	. . .	3,250	70
East Daniels	120	. . .	120	. . .	. . .	120	. . .	120	. . .
Deep Creek	161	. . .	161	. . .	. . .	161	. . .	161	. . .
East Fork	7,360	1,003	3,846	2,511	. . .	7,360	. . .	2,936	4,424
Roy Arbon	46,056	19,603	22,155	4,298	26,977	19,079	. . .	27,603	18,453
Indian Spring	10,407	1,618	7,873	916	424	9,983	. . .	5,832	4,575
Black Rock	11,141	9,059	2,082	. . .	. . .	11,141	. . .	8,660	2,481
Michaud Creek	4,215	2,049	2,166	. . .	3,134	1,081	. . .	4,144	71
2½ Mile	2,618	2,477	. . .	141	1,056	1,562	. . .	1,820	798
Moonlight Mine	2,223	2,223	. . .	. . .	1,590	633	. . .	2,216	7
Rapid Creek	3,051	3,051	. . .	. . .	. . .	3,051	. . .	2,842	209
Inkom	5,511	3,223	2,288	. . .	5,511	. . .	. . .	5,030	481
Stanger	548	548	. . .	. . .	548	. . .	. . .	548	. . .
Shoestring	2,281	1,581	700	. . .	2,281	. . .	. . .	2,271	10
Bullock	195	. . .	195	. . .	. . .	195	. . .	195	. . .
Goodenough	23	. . .	23	. . .	. . .	23	. . .	23	. . .
McCammon	3,248	1,164	2,084	. . .	3,248	. . .	. . .	2,872	376
Price	265	265	. . .	. . .	265	. . .	. . .	224	41
Toponce	4,291	3,837	454	. . .	4,163	128	. . .	4,291	. . .
Hebdon	791	791	. . .	. . .	791	. . .	. . .	780	11
Taylor	411	135	276	. . .	411	. . .	. . .	411	. . .
Bancroft	11,000	9,336	1,664	. . .	. . .	11,000	. . .	8,721	2,279
Wistisen	215	. . .	215	. . .	. . .	215	. . .	215	. . .
Fish Creek	2,550	2,042	238	270	. . .	2,550	. . .	1,994	556
Rowsell	40	. . .	40	. . .	. . .	40	. . .	40	. . .
Lund	5,569	5,208	361	. . .	. . .	5,569	. . .	4,949	620
Crystal	5,240	3,437	1,390	413	. . .	5,240	. . .	4,550	690
Swim	281	. . .	281	. . .	. . .	281	. . .	281	. . .
Tate Individual	80	80	. . .	. . .	. . .	80	. . .	80	. . .
Myler	120	120	. . .	. . .	120	. . .	. . .	120	. . .
Garden Creek	357	40	277	40	277	80	. . .	357	. . .
Stewart Individual	988	201	787	. . .	988	. . .	. . .	979	9
Soloago	3,438	3,061	377	. . .	3,438	. . .	. . .	3,324	114
Rogers Individual	812	812	. . .	. . .	812	. . .	. . .	777	35
Hatley	229	229	. . .	. . .	229	. . .	. . .	162	67
Preslar Individual	40	. . .	40	. . .	40	. . .	. . .	40	. . .
Rocks	499	. . .	499	. . .	. . .	499	. . .	499	. . .
Johnson	1,114	1,114	. . .	. . .	1,114	. . .	. . .	637	477
Anderson	2,360	. . .	2,012	348	2,360	. . .	. . .	1,641	719
Howe	80	. . .	80	. . .	. . .	80	. . .	80	. . .
Sec. 3 Totals	410,805	106,075	222,954	81,776	157,344	244,357	9,104	322,871	87,934
L. Allen	520	. . .	509	11	. . .	520	. . .	520	. . .
B. Almond	53	. . .	. . .	53	. . .	53	. . .	53	. . .
T. Bloxham	80	. . .	. . .	80	. . .	. . .	80	80	. . .
A. Brady	40	. . .	. . .	40	. . .	. . .	40	40	. . .
C. Criddle	40	. . .	. . .	40	. . .	. . .	40	40	. . .
Cambridge	1,507	. . .	1,347	160	. . .	1,507	. . .	1,336	171
N. Casperson	440	. . .	440	. . .	. . .	440	. . .	415	25
Criddle & Sons	564	. . .	564	. . .	. . .	564	. . .	564	. . .
R. Davis	340	. . .	. . .	340	. . .	. . .	340	340	. . .
Egan	635	. . .	. . .	635	. . .	635	. . .	635	. . .
Cottonwood	920	. . .	480	440	. . .	. . .	920	897	23
A. Evans	200	. . .	200	. . .	200	. . .	. . .	200	. . .
W. Fuhriman	40	. . .	. . .	40	. . .	40	. . .	40	. . .
D. Hadley	80	. . .	. . .	80	. . .	80	. . .	80	. . .
Hatley Individual	114	114	. . .	. . .	114	. . .	. . .	94	20
G. Jensen	33	. . .	33	. . .	. . .	33	. . .	33	. . .
S. Kent *	95	. . .	. . .	95	95	. . .	. . .	95	. . .
Larson	40	40	. . .	. . .	40	. . .	. . .	40	. . .
McNee	160	. . .	120	40	. . .	160	. . .	160	. . .
Marley	254	254	. . .	. . .	. . .	254	. . .	254	. . .
P. Morrison	120	. . .	. . .	120	. . .	120	. . .	120	. . .
W.T. Evans	240	240	. . .	. . .	. . .	240	. . .	240	. . .
Right Hand Graz. Assoc.	600	. . .	360	240	. . .	600	. . .	600	. . .
Salveson	1,519	1,519	. . .	. . .	1,519	. . .	. . .	1,390	129
Servoss Brothers*	200	. . .	80	120	200	. . .	. . .	200	. . .
Thompson	1,340	. . .	1,340	. . .	. . .	1,340	. . .	1,263	77
Tippits	65	65	. . .	. . .	65	. . .	. . .	65	. . .
L. Roberts	120	. . .	120	. . .	. . .	120	. . .	120	. . .
Sec. 15 Totals	10,359	2,232	5,593	2,534	2,233	6,706	1,420	9,914	445
Section 3 & 15 Totals	421,164	108,307	228,547	84,310	159,577	251,063	10,524	332,785	88,379
	(100%)	(26%)	(54%)	(20%)	(38%)	(60%)	(2%)	(79%)	(21%)

*A few allotments contain seeding project areas whose condition was assessed only in terms of grazing value: Curlew Allotment (17,520 acres), South Stone (3,200 acres), Pleasantview (600 acres), S. Kent (40 acres) and Servoss Brothers (20 acres).

vegetation inventory. The present total forage production (134,235,200 pounds) is shown by allotment in Table 2-3. This represents that portion of the total biomass useable by all classes of grazing animals after applying *Proper Use Factors* to the total biomass production of each plant species.

Changes in production can be occasioned by altered range condition. Productivity can also be affected by the operation of grazing systems, grazing treatments, etc., and by land treatments undertaken with a specified vegetative goal in mind. For purposes of impact analysis in Chapter 4, it is assumed that all such variables should be taken into account in making projections with respect to future productivity of the range land. (The methodology used in making projections is explained in Appendix B.)

Suitability

Suitability refers to the capability of forage producing land to be grazed by livestock on a sustained yield basis without damage to the basic resources. Suitable range should not be confused with "useable" range. Many areas can be grazed by livestock and are therefore useable, but may not be suitable for grazing on a long-term basis because of the resulting damage to the area or adjacent areas.

Criteria used to determine range suitable for livestock grazing in the EIS area included:

1. Steepness of slope (50 percent or less)
2. Distance from water (2 miles or less)
3. Soil erosion (*Soil Surface Factor* 60 or less)

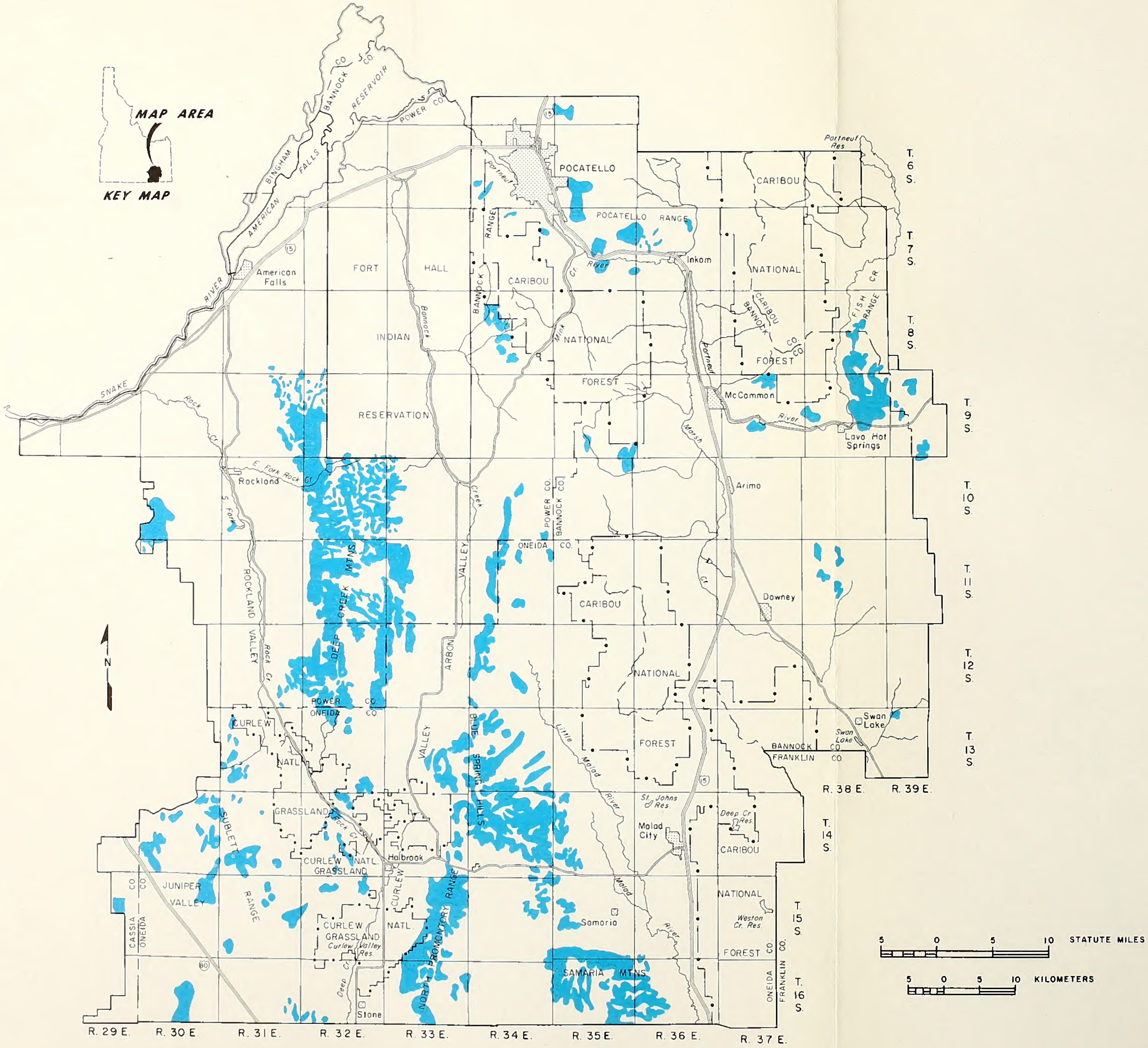
Table 3-3 and Map 3-9 display by acreage and geographic location the suitable and unsuitable livestock grazing range land in the EIS area. Since alternative proposals would not alter the present suitability determinations, no further analysis of suitability will be made in this document.

Cover

Vegetative cover is the combined aerial parts of plants and mulch. According to Stoddart, Smith and Box (1975), cover plays an important part in the plants' ability to produce forage. The amount of vegetal material greatly affects infiltration rates. The consequence of reduced infiltration is increased runoff, which in turn reduces the effectiveness of the precipitation and makes ranges more arid than they normally are. Thus, the percentage of ground protected by vegetative cover can have a pronounced effect on forage production. At present, vegetative cover throughout the EIS area averages 25 percent (see Table 4-8).

IV. WILDLIFE

Vegetation types identified in the EIS area (see Table 3-2) represent a wide variety of plant communities. The vegetative composition of any given plant community largely determines the value of that community as habitat



MAP 3–9

RANGE SUITABILITY

LEGEND

🟦 UNSUITABLE

for wildlife. The greater the plant community diversity, the greater the diversity of associated wildlife species.

Seven species of amphibians occur in the EIS area, along with 28 species of fish, 19 reptile species, 83 mammal species and 289 species of birds. A complete species list is available at the BLM Burley District Office.

Endangered, Threatened, or Sensitive Wildlife Species

Two birds, the American peregrine falcon and the bald eagle, are currently on the Federal Endangered and Threatened List. The peregrine has been sighted within the EIS area; however, no nesting eyries have been identified. It appears that the peregrine is a rare migrant. The bald eagle migrates into the EIS area in the late fall and stays through the winter (November 15 through March 31). It generally feeds along the stretch of the Snake River between American Falls dam and Eagle Rock. Between 20 and 60 bald eagles have been counted at a major winter roost site, most of which is on public land south of American Falls. The drainage containing the winter roost site has been proposed as an *Area of Critical Environmental Concern.* The Burley District has also conducted a formal Section 7 consultation with U.S. Fish and Wildlife Service (USFWS) concerning the eagle winter roost and the management BLM proposes for the area. USFWS biologists indicated no problem with the proposed plan; however, they did ask to be kept informed of any future managerial changes that might affect the roost site.

Fourteen sensitive animal species are known to inhabit the EIS area. The sensitive species list has been jointly determined by BLM and the Idaho Department of Fish and Game (IDFG). It lists Idaho species considered vulnerable to elimination or serious population reduction due to current low numbers, restricted range and/or narrow habitat requirements. The primary purpose of the designation is to provide an early warning mechanism that enables BLM to make management decisions that will not adversely affect population or habitat of these species.

Five sensitive mammals occur within the EIS area: (1) The spotted bat, found in arid country, feeds primarily on insects (small moths) caught on the wing near water. Relatively little is known about its life history. (2) The river otter, being aquatic, is found along streams and lake borders. It eats fish, frogs, crayfish, and other aquatic invertebrates. (3) The kit fox is a peripheral species in Idaho. A suitable den site is a critical habitat requirement since the kit fox uses the den throughout the year. The kit fox prefers open, level, sandy ground; but it is also found in low desert vegetation, greasewood, shadscale and juniper. It feeds on small desert rodents. (4) The Canada lynx inhabits forested areas and is extremely rare in the EIS area on public land. It feeds for the most part on snowshoe hares, supplemented with rodents and birds. (5) The bobcat is found near rimrock areas, brushy hills, and mountains. It feeds on small mammals and birds, and will eat carrion if not tainted.

Nine sensitive birds are identified on the State list: (1) The ferruginous hawk is primarily found in sagebrush/grass environments along the edge of juniper communities. It is prone to nest desertion if disturbed during the incubation period (March 20 to June 15). Its primary food item is jackrabbit. (2) The osprey is an uncommon migrant in the EIS area. (3) The gyrfalcon, a winter migrant in the area, is occasionally sighted in association with large concentrations of waterfowl in the American Falls Reservoir area. (4) The pigeon hawk (merlin) inhabits open woodlands and during migration can be found in foothill areas, marshes and open country. It eats birds almost exclusively, with insects a minor but significant part of its diet. (5) The western burrowing owl is primarily found in the sagebrush/grass environments in flat to rolling country. It nests in abandoned rodent and badger burrows in open ground and feeds mainly on insects and reptiles. (6) The sharp-tailed grouse inhabits brushy parkland, forest edges, clearings, grasslands and sagebrush areas adjacent to grain fields. Its diet consists of insects, seeds, buds, leaves and berries. (7) Mountain quail habitat consists of brushy mountain slopes to timbered sites. This bird has been reported in the EIS area; however, no valid sightings have been made in the past few years. (8) The white-faced ibis inhabits fresh marshes, irrigated land, streams and reservoirs where tules exist. Its diet consists of crustaceans, small fish, amphibians, earthworms and insects. (9) The long-billed curlew is a ground nesting bird of open, grassy areas on level to rolling hills. Insects serve as its major food source.

Big Game

Big game animals in the area are deer, elk, antelope, bear, cougar and moose. *Crucial habitat* for mule deer is shown in Map 3-10, but mule deer are not restricted to those crucial winter areas alone. They occur throughout the EIS area during other seasons of the year. Antelope, on the other hand, are confined to that portion of Black Pine Valley south and west of I-80 North (see Map 3-11). This is a small remnant herd which does not provide any hunting opportunity. Elk are generally restricted to those areas shown in Map 3-11. Estimated dietary composition by season of use for elk, deer and antelope is analyzed in land-use planning documents available in the Burley District Office.

Habitat acreage (Table 3-4) and population levels (Table 3-5) for big game vary a great deal from one year to the next. This is primarily the result of seasonal weather conditions that in turn affect big game habitat conditions. Population trends for deer and elk are up in the EIS area. The antelope trend is static. (See Appendix H for methodology/rationale for the big game population estimates.)

Black bear, cougar, and moose rarely occur on public land in this area and will therefore not be discussed further in this document.

Table 3-4

Big Game Habitat Acreage

Planning Unit	Antelope	Deer		Elk		
	Yearlong	Winter	Summer	Winter	Summer	Yearlong
Curlew	32,300 ac.	45,500 ac.	22,500 ac.	. . .	. . .	. . .
Malad Hills	. . .	33,200 ac.	61,000 ac.	3,000 ac.	2,000 ac.	. . .
Roy Arbon	. . .	17,500 ac.	45,000 ac.	. . .	. . .	. . .
Pocatello	. . .	34,800 ac.	30,300 ac.	4,800 ac.	. . .	7,000 ac.
TOTAL	32,300 ac.	131,000 ac.	158,800 ac.	7,800 ac.	2,000 ac.	7,000 ac.

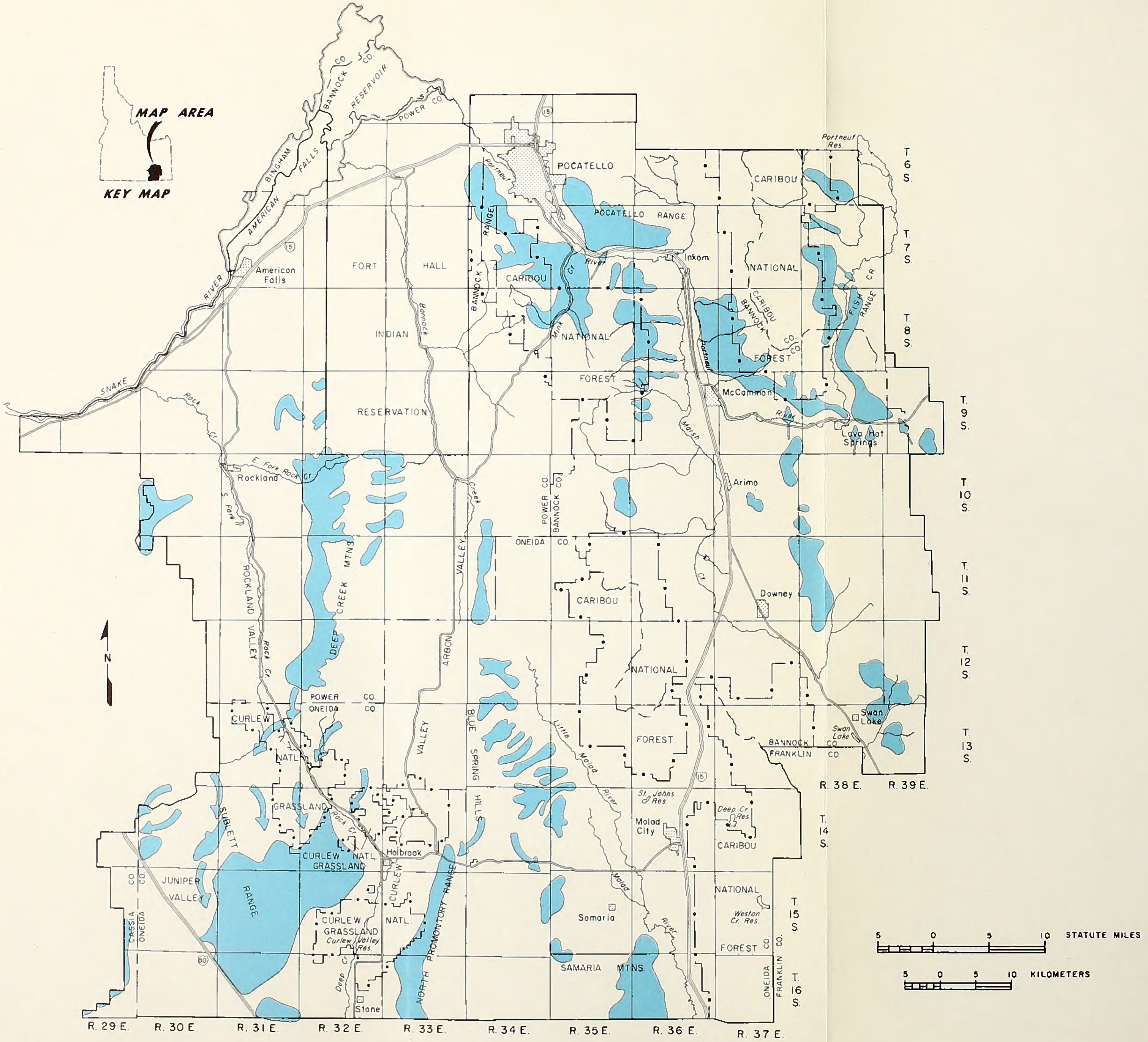
MAP 3–10

MULE DEER WINTER RANGE

LEGEND

🟦 MULE DEER WINTER RANGE

⟶ MIGRATION ROUTES



MAP 3–11

ELK AND ANTELOPE USE AREAS

LEGEND

- 🟦 ELK WINTER RANGE
- ▥ ELK - YEAR LONG RANGE
- ▤ ELK - SUMMER RANGE
- 🟧 ANTELOPE - YEAR LONG RANGE

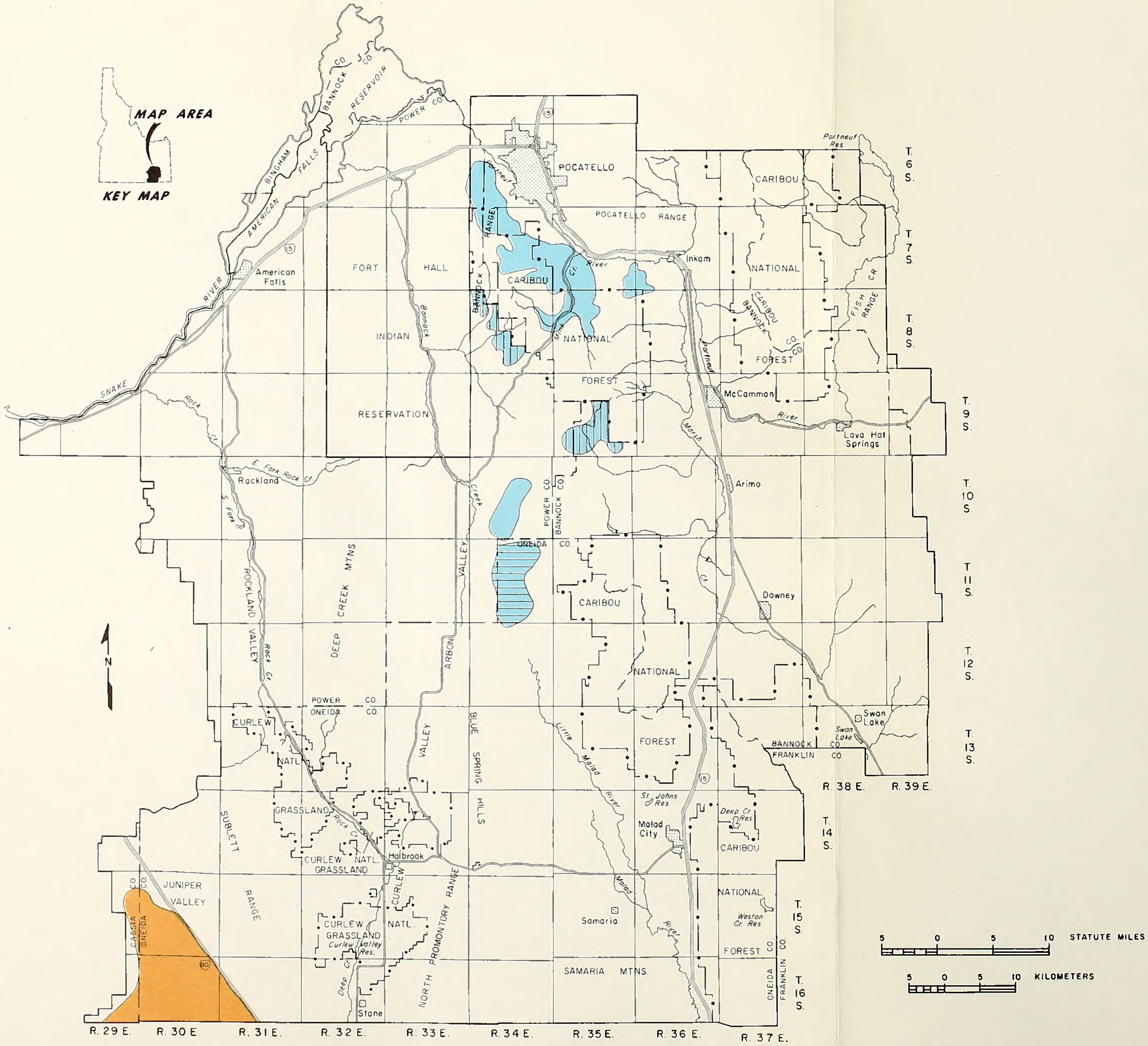


Table 3-5

Estimated Populations of Big Game Animals by Allotments*

ALLOTMENT	DEER			ELK			ANTELOPE		
	Apr.-Jun.	Jul.-Oct.	Nov.-Mar.	Apr.-Jun.	Jul.-Oct.	Jan.-Mar.	Apr.-Jun.	Jul.-Oct.	Nov.-Mar.
Houtz Canyon			23						
Table Mountain			8						
Cedar Ridge			8						
Side Canyon			4						
Cold Water			4						
Register Rock			7						
Rock Creek			21						
Curlew	425	275	495				40	60	40
South Stone	100	50	725						
South Bull	80	70							
Pleasantview	500	600	400						
Samaria	200	250	300						
Walker	20	20	10						
Madsen	10	10							
Hanzel Mountain	100	120	250						
Big Onion	100	50	50	15	15	20			
Cedar Mountain	20	20	10						
Dairy Creek	50	60	100	10	10				
East Fork	150	150	300						
Roy Arbon	1,220	1,210	1,400						
Indian Spring	150	150	50						
Black Rock	160	160	300						
Michaud Creek	40	40	75			15			
2 1/2 Mile	45	45	90						
Moonlight Mine	30	30	100						
Rapid Creek	40	40	75						
Inkom	105	105	275	3	3	20			
Stanger	15	15	50						
Shoestring	50	50	150						
McCammon	75	75	175						
Toponce	80	80	300						
Hebdon	20	20	100						
Taylor	10	10	60						
Bancroft	235	235	600						
Wistisen	5	5	10						
Fish Creek	45	45	100						
Lund	90	90	75						
Crystal	100	100	50	4	4	25			
Swim	7	7	7						
Tate Ind.	3	3	3						
Myler	3	3	3						
Garden Creek	10	10	10						
Stewart Ind.	20	20	20						
Soloago	65	65	35	10	10	20			
Rogers Ind.	20	20	20						
Hatley	10	10	10						
Preslar Ind.	2	2							
Rocks	20	20	20						
Johnson	40	50	70	5	5	10			
L. Allen	9	9	9						
C. Criddle	2	2	10						
Cambridge	35	35	300						
N. Casperson	10	10	50						
Criddle & Sons	15	15	75						
Cottonwood	25	25	120						
A. Evans	6	6	25						
Hatley Ind.	6	6	10						
G. Jensen			3						
Larson	3	3	10						
Marley	8	8	15						
Right Hand Grazing	15	15	30						
Salveson	25	25	175						
Thompson	30	30	100						
Tippits	3	3	10						
L. Roberts	4	4	10						
Etcheverry	40	40	15						
Total	4,706	4,626	7,915	47	47	110	40	60	40

*See Appendix H for rationale used to derive population estimates.

Upland Game

Upland game found in the EIS area include sage grouse, sharp-tailed grouse, chukar partridge, Hungarian partridge, forest grouse (blue and ruffed), mourning dove, ring-necked pheasant and cottontail rabbit. Mourning doves are the most abundant upland game bird and are found throughout the EIS area. They occur in high densities in riparian areas and moderate densities in sagebrush habitats. Cottontails are also found throughout the EIS area, as are Hungarian partridge. Sage grouse, too, are widespread in the region, but they are seen most frequently in the Curlew and Malad Hills Planning Units. Sharp-tailed grouse, previously described as a sensitive species, are observed throughout the EIS area and are locally abundant in portions of Oneida and Power Counties and appear to be expanding their range. Blue and ruffed grouse habitat is generally limited to the higher elevation forested areas. Crucial grouse habitat (sage, sharp-tailed, forest) is presented in Map 3-12. The chukar is a bird of the arid, rough, mountainous country. Preferred habitat consists of steep, rugged canyons with talus slopes and rocky outcrops. Ring-necked pheasants occur adjacent to agricultural areas mainly in the southern half of the Pocatello Planning Unit. They occur in extremely limited numbers on BLM-administered land in the EIS area.

Waterfowl

Waterfowl, primarily mallards, pintails, and green-winged teal, frequent some of the streams and reservoirs that are located on BLM-administered lands. Important nesting and migratory resting sites are Wiregrass Reservoir, Hawkins Reservoir and Swan Lake.

Furbearers

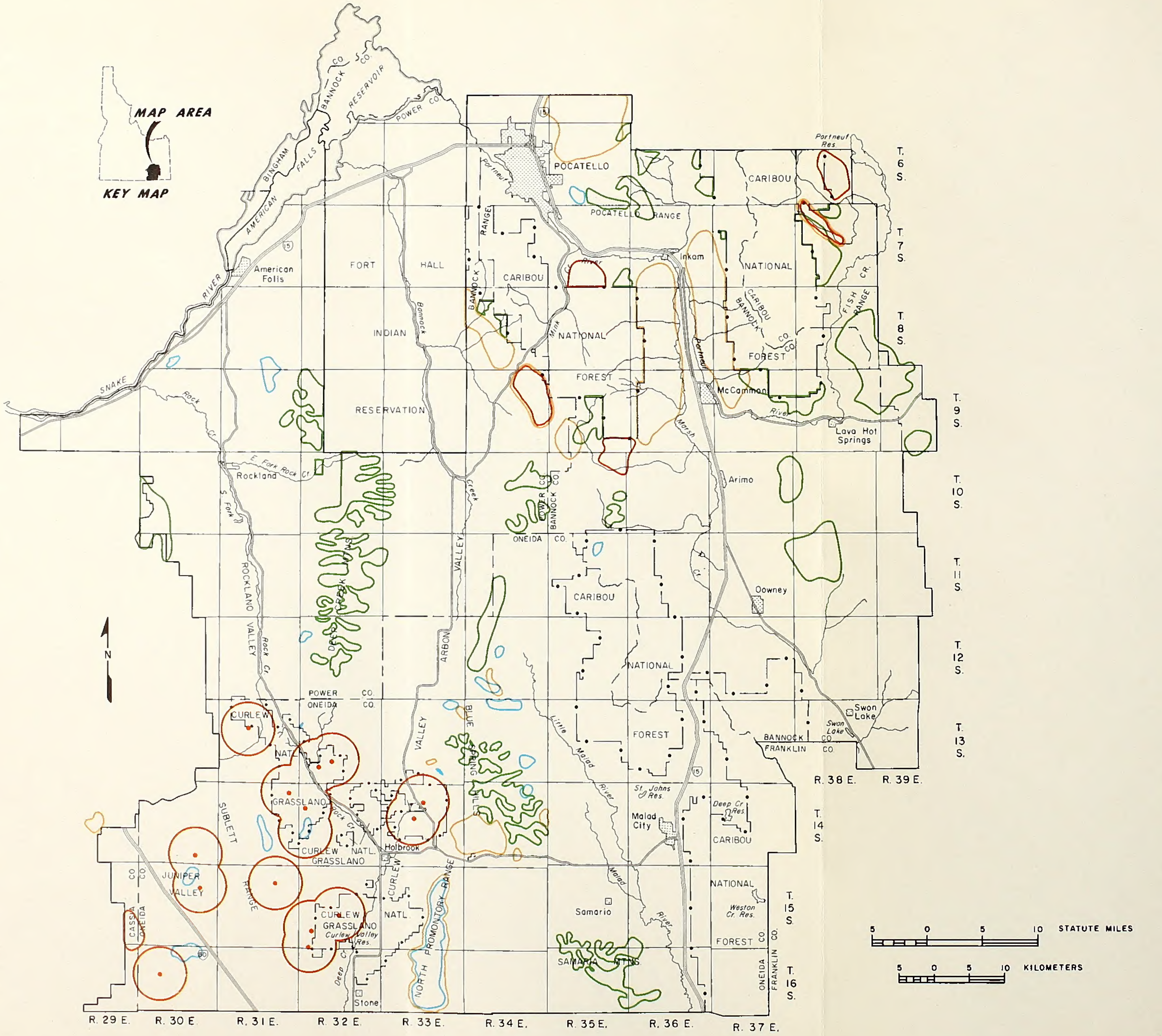
Riparian areas are very important for raccoon, weasel, skunk, beaver and muskrat. Current inventory and harvest information is very scarce for these furbearers. Other species harvested for their pelts are coyotes and bobcats, both of which are widespread in the EIS area and are harvested in the greatest numbers.

Non-game

Non-game wildlife are species for which no hunting season or harvest is allowed. These species make up the bulk of the fauna in the EIS area. Many of them are dependent on riparian areas now heavily utilized by domestic livestock. This concentration of use has resulted in habitat degradation for riparian non-game species.

Aquatic Wildlife

Portions of 15 streams in the EIS area provide approximately 15.9 miles of habitat for resident coldwater game fish (see Map 3-13). Species include brook, cutthroat and brown trout. Two reservoirs, Wiregrass and Hawkins, serve as significant rainbow trout fisheries. Both fisheries are maintained



MAP 3–12

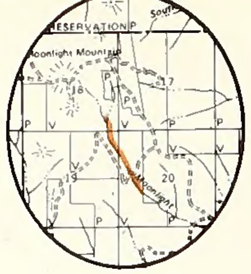
UPLAND GAME BIRD HABITATS

LEGEND

- — SAGE GROUSE WINTER AREAS
- — FOREST GROUSE AREAS
- — SHARP-TAILED GROUSE AREAS
- — SAGE GROUSE NESTING AND BROOD REARING AREAS
- ● SAGE GROUSE STRUTTING GROUNDS

MAP 3–13

STREAM CONDITION CLASS



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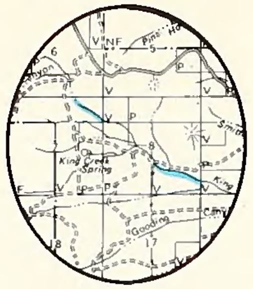

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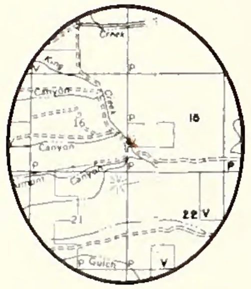

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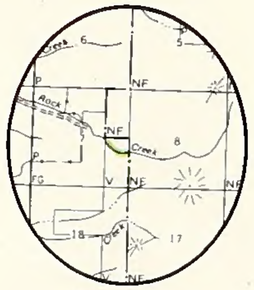

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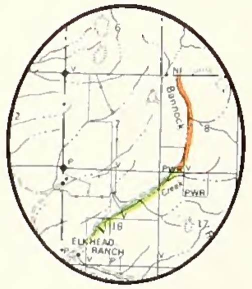

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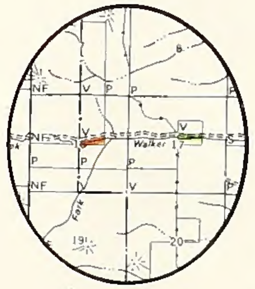

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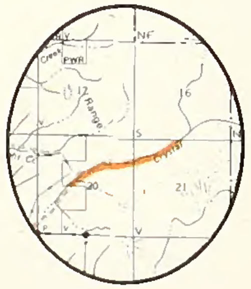

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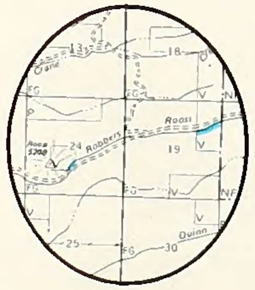

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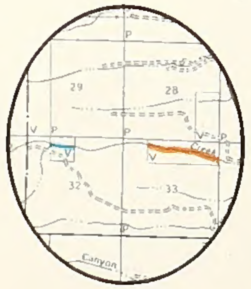

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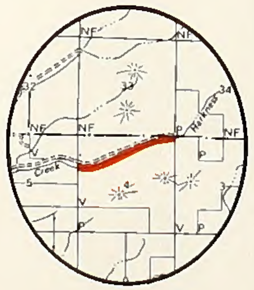

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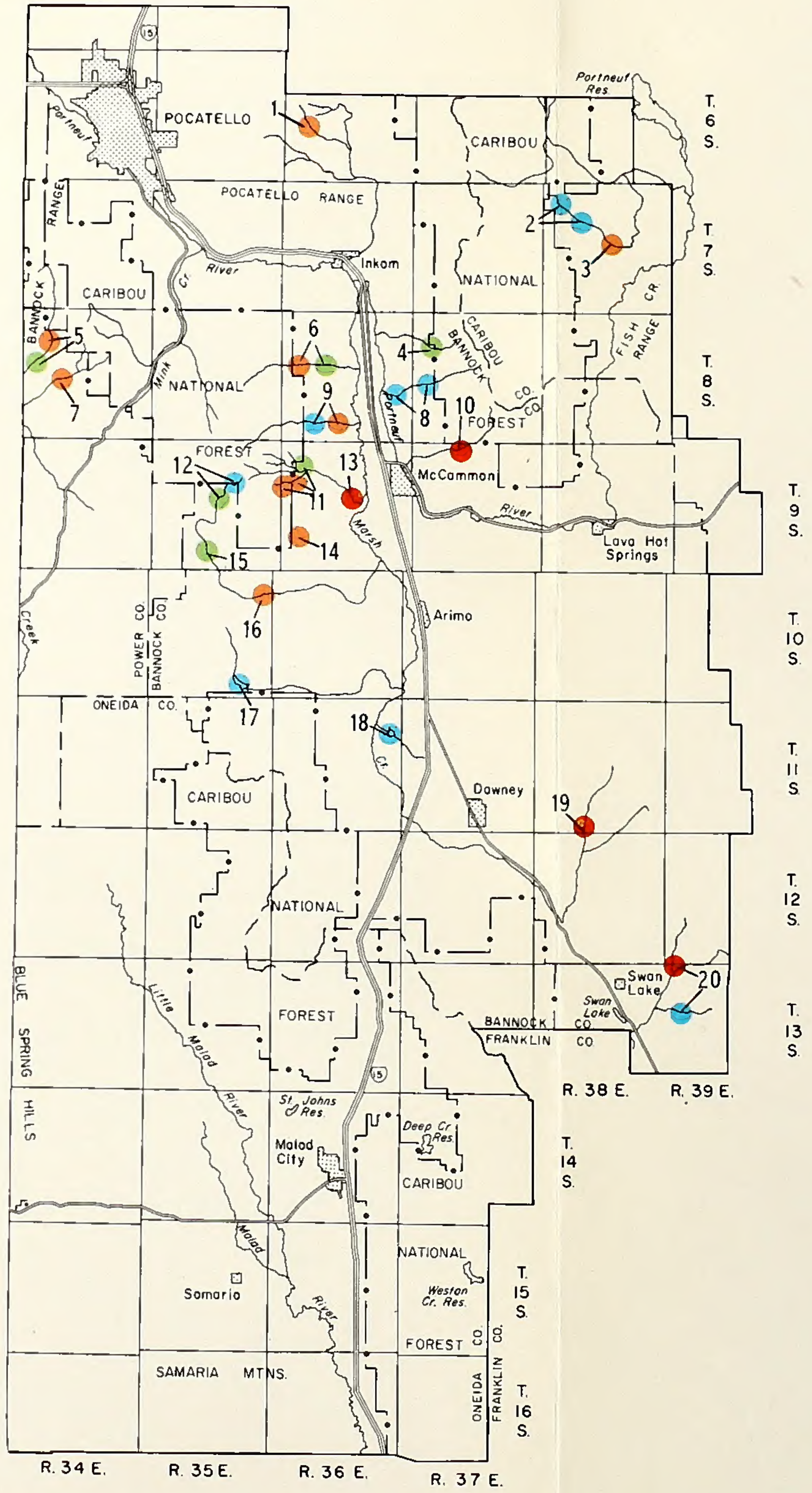

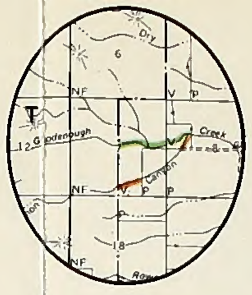

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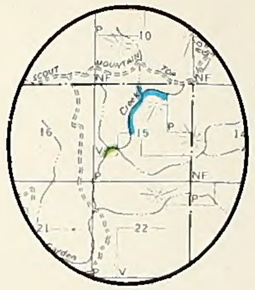

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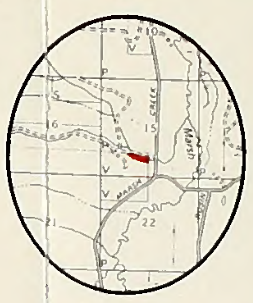

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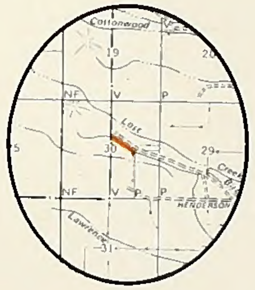

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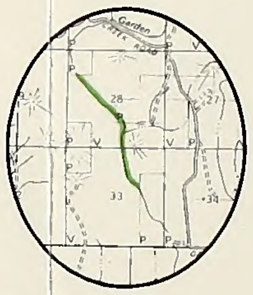

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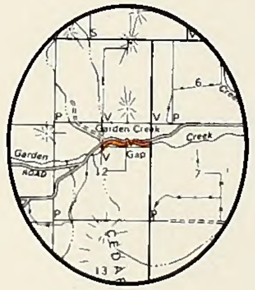

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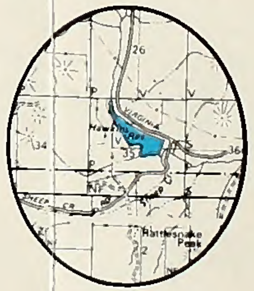

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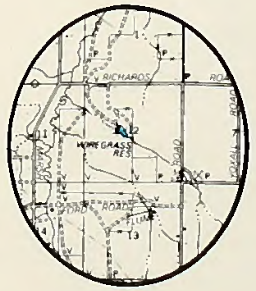

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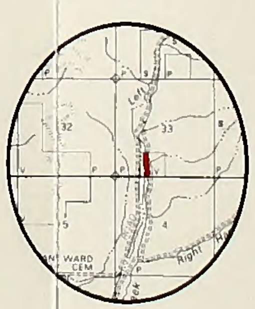

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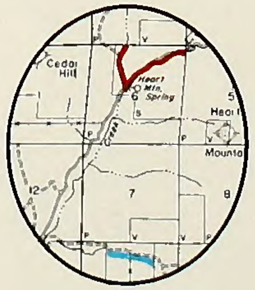

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LEGEND

🟦	EXCELLENT
🟩	GOOD
🟧	FAIR
🟥	POOR

KEY

1. Moonlight Creek
2. King Creek
3. King Creek
4. Upper Rock Creek
5. Midnight Creek
6. Walker Creek
7. Crystal Creek
8. Robbers Roost Creek
9. Bell Marsh Creek
10. Harkness Creek
11. Goodenough Creek
    Mormon Canyon Creek
12. Garden Creek
13. Goodenough Creek
14. Birch Creek
15. Garden Creek
16. Garden Creek
17. Hawkins Reservoir
18. Wiregrass Reservoir
19. Left Hand Fork Marsh Creek
20. Stockton Creek

by the Idaho Department of Fish and Game via an annual stocking program. Table 3-6 lists the species and approximate number of trout per mile for each stream. These streams have a local fishery value. Their major value appears to be as spawning and rearing areas for the larger streams into which they feed.

Table 3-6

Cold Water Game Fish Present on Public Land in the EIS Area

Stream	Miles of Stream Public	Total	Species	Fish/Mile*
Bell Marsh Creek	.7	5.0	BnT, CT	475
Birch Creek	.3	3.0	BT, CT	106
Crystal Creek	1.3	4.1	CT	739
Garden Creek	3.2	16.0	BT, CT	4,224
Goodenough	1.0	6.4	CT	845
King Creek	.7	3.4	CT	317
Harkness Creek	1.1	4.5	CT	158
Left Hand Fork of Marsh Creek	.3	9.2	CT	53
Midnight Creek	2.4	6.0	CT	581
Moonlight Creek	1.1	2.5	CT	950
Mormon Canyon Creek	.5	2.3	CT	634
Robber's Roost Creek	.4	4.5	CT	53
Stockton Creek	2.0	5.5	CT	475
Upper Rock Creek	.3	4.0	CT	106
Walker Creek	.6	5.5	CT	2,376

BnT - brown trout CT - cutthroat trout BT - brook trout

A stream survey contracted by BLM to the IDFG in the summer of 1978 determined the condition of each stream, using a modified version of the standard BLM stream survey procedure (the methodology is explained in Appendix E). Survey results indicate that 56 percent of the resident trout habitat is in poor to fair condition (see Table 3-7), largely as a result of inadequate streambank vegetation and overhanging banks, unstable stream banks and heavy streambed siltation. Heavy grazing of riparian areas by domestic livestock has been identified by IDFG as an important contributor to the reduced habitat condition along the streams. It should be noted that because of the small, isolated nature of the public land ownership on many of these streams, the opportunities to improve the water quality via habitat improvement are somewhat limited.

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*These estimates are based on a single electro-fishing run through a 100-foot section of stream. That total has been multipled by 52.8 to convert the data to a fish/mile basis. This should be viewed as a minimum estimate.

Table 3-7

Habitat Conditions of Fishery Streams on Public Land

	Miles of Stream by Condition Class			
Streams	Excellent	Good	Fair	Poor
Bell Marsh Creek	.2		.5	
Birch Creek			.3	
Crystal Creek			1.3	
Garden Creek	.7	2.0	.5	
Goodenough Creek		.8		.2
King Creek		.6	.1	
Harkness Creek				1.1
Left Hand Fork of Marsh Creek				.3
Midnight Creek		1.3	1.1	
Moonlight Creek			1.1	
Mormon Canyon Creek			.5	
Robber's Roost Creek	.4			
Stockton Creek	.5			1.5
Upper Rock Creek		.3		
Walker Creek		.3	.3	
TOTAL MILES	1.8 (11%)	5.3 (33%)	5.7 (36%)	3.1 (20%)

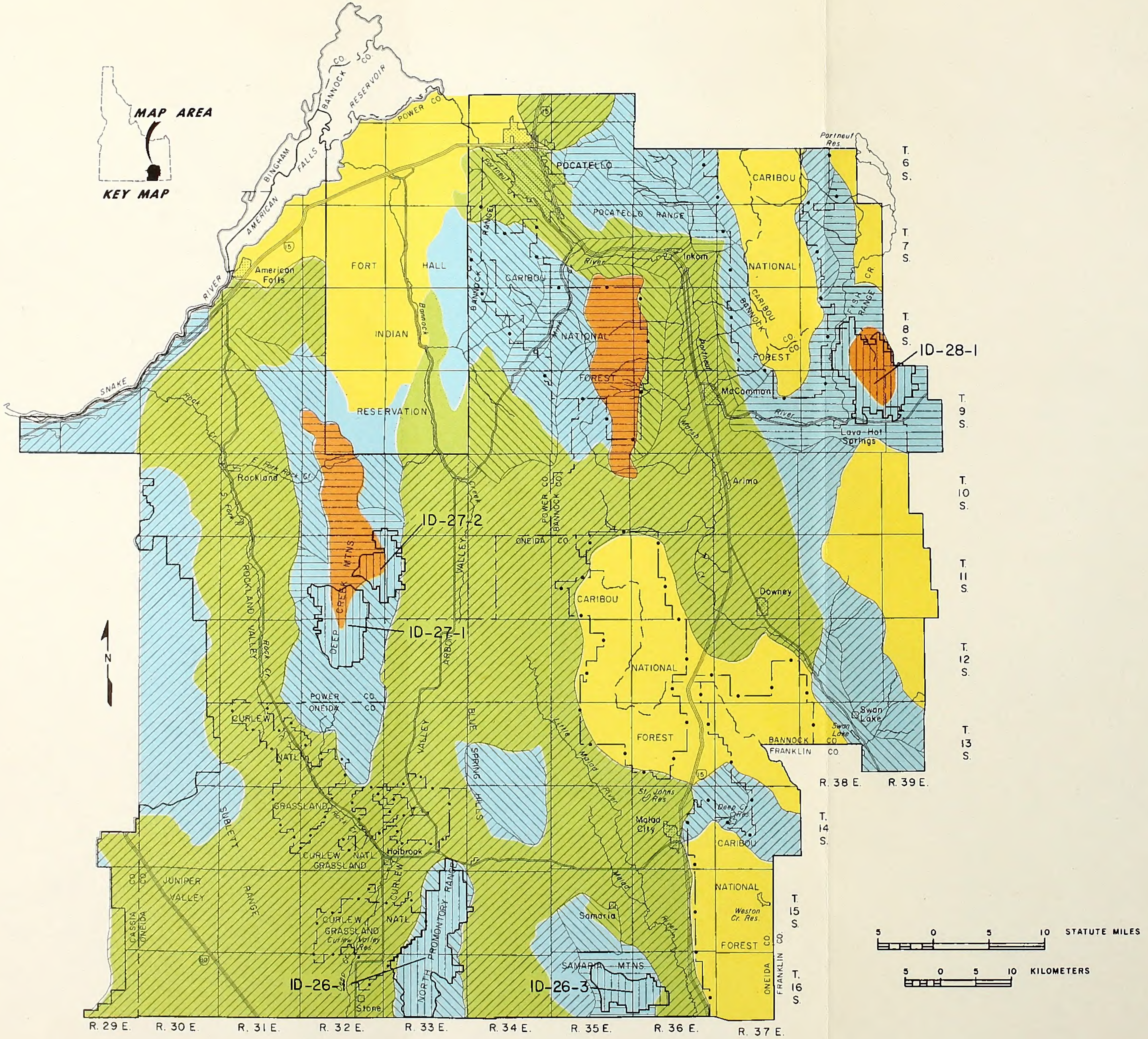
V. VISUAL RESOURCES

The scenic quality of the public land in the EIS area has been evaluated and categorized as either "A" (high), "B" (medium) or "C" (low), as shown on Map 3-14. These ratings are based on consideration of landform, vegetation, water, color, scarcity and cultural modifications (*intrusions*), in accordance with the Visual Resource Management (VRM) system presented in BLM Manual 8410-8411. This system utilizes naturalness as a basic criterion for determining scenic quality--the more intrusions apparent in the landscape, the lower the scenic quality. At present, scenic quality in the EIS area is rated as follows: Class A--26,941 acres (6 percent of public land), Class B--176,089 acres (41 percent) and Class C--228,478 acres (53 percent). For information on visual resource inventory methodologies, see Appendix F.

Though variations exist within each scenic quality category, the following descriptions are representative:

A. High Scenic Quality . . . generally high elevation mountain areas with steep slopes, dominant ridge lines and rock outcroppings. These areas show high contrast with seasonal display of color and an array of textural variations created by the assorted vegetation. Only limited evidence of man's impact on the land is evident.

B. Medium Scenic Quality . . . primarily foothill and low mountain areas lying between the high mountains and the valley bottoms. These areas may show some characteristics typical of high quality scenery, others typical of low quality scenery.



MAP 3–14

VISUAL RESOURCES AND WILDERNESS INVENTORY UNITS

LEGEND

SCENERY QUALITY CLASSES

🟧 HIGH A

🟦 MEDIUM B

🟩 LOW C

🟨 NOT INVENTORIED

VISUAL RESOURCE MANAGEMENT CLASSES

▥ CLASS I

▤ CLASS II

▧ CLASS III

▨ CLASS IV

☐ UNRANKED (NO PUBLIC LAND)

WILDERNESS INVENTORY UNITS

ID–26–1

C. Low Scenic Quality . . . typically flat plateaus, valley bottoms and low rolling foothills. Textural and color contrasts are limited, often monotonous. These areas are generally typical farm and range land, where man's impact on the land is obvious.

The VRM system provides for management of the visual resource to prevent degradation. Management classes, delineated after considering the scenic quality, the *sensitivity level* and the *distance zone,* are established to provide appropriate objectives for management of visual resources. These classifications place 56,531 acres or 13 percent of public land in VRM Class I (most natural), 38,528 acres or 9 percent in VRM Class II, 94,362 acres or 22 percent in VRM Class III and 242,087 acres or 56 percent in VRM Class IV (least natural). Locations are shown on Map 3-14.

All VRM Class I acreage in the Bannock-Oneida EIS area is presently in Wilderness Inventory Units. Because of the nature of management in this class, only areas of special designation, such as wilderness, are included. No additional acreage, therefore, would be added to VRM Class I under any of the alternatives. Furthermore, if any of the Wilderness Inventory Units should be dropped from further consideration for wilderness designation, the amount of acreage in VRM Class I would decrease--potentially to zero.

VI. WILDERNESS

The Federal Land Policy and Management Act of 1976 (FLPMA) requires BLM to review all roadless areas of 5,000 acres or more to determine whether these areas have wilderness characteristics as defined in the Wilderness Act of 1964. The Burley District has completed the initial wilderness inventory of all public lands in the EIS area in accordance with Bureau procedures.

All public land in the EIS area was included in the initial inventory. Of this acreage, 223,336 acres were dropped because they did not meet the 5,000-acre size requirement. Of the remaining acreage, 151,641 acres were dropped from further consideration in the wilderness process because they "clearly and obviously" did not meet the criteria for identification as Wilderness Study Areas. The remaining 56,531 acres (see Table 3-8 and Map 3-14) will receive more intensive inventory.

Wilderness characteristics being considered during the inventory process are size, naturalness, and either an outstanding opportunity for solitude or an outstanding opportunity for a primitive and unconfined type of recreation.

Table 3-8

Wilderness Inventory Units In EIS Area

Unit Name	Unit No.	Acres	Allotment
Hanzel Mountain	ID-26-1	20,615	Hanzel Mountain, Curlew
South Samaria	ID-26-3	6,615	Samaria
South Deep Creek	ID-27-1	9,609	Roy Arbon
Deep Creek Peak	ID-27-2	6,646	Roy Arbon
Petticoat Peak	ID-28-1	13,046	Bancroft, Fish Creek, Lund

Each of these five inventory units will be managed under interim policy and guidelines until it is either disqualified from further wilderness consideration or designated as wilderness by Congress. Objectives of interim management are (1) to continue resource uses on lands under wilderness review in a manner that maintains these areas' suitability for preservation as wilderness, and (2) to manage existing mineral and grazing uses in these inventory units in the same manner and degree as when FLPMA was enacted (these uses can be expanded, provided wilderness suitability is not impaired).

The wilderness review process is a continuing process advancing toward final disposition of the inventory units during the next several years. Therefore, the status of the five Wilderness Inventory Units in the EIS area could be changed before the EIS is completed. Should any or all of these units eventually be designated as wilderness, they would then be managed in the manner and degree specified in the Wilderness Act. Information regarding the current status of any of the Wilderness Inventory Units may be obtained at the BLM Burley District Office.

VII. RECREATION

Recreation on public lands in the Bannock-Oneida area consists primarily of dispersed activities--sightseeing, hunting, target shooting, fishing, off-road vehicle use, cross-country skiing, hiking, horseback riding, rock climbing and camping. There are no developed recreation sites administered by the BLM within the EIS area, though some facilities have been provided at several sites on public lands. In general, these facilities consist of parking areas, outdoor toilets and garbage cans.

The heaviest recreation use in the EIS area occurs near Pocatello, the area's main population center. Off-road vehicle use is heavy in this area, with other activities (including hiking, sightseeing, cross-country skiing and hunting) also occurring frequently. In addition, the Caribou Ski Area, located partially on public land, attracts downhill skiers accounting for approximately 25,000 visits per year.

Hunting and fishing are two recreation activities sometimes affected by livestock grazing. Present grazing practices have caused localized alterations in habitat conditions which are restricting game populations and reducing stream fishery qualities, thus impairing hunting and fishing opportunities. Annual hunter days in the EIS area now number approximately 12,500 (8,400 for mule deer and 4,100 for upland game), while fisherman days total 8,500 annually (7,500 at Hawkins Reservoir and 1,000 at Wiregrass Reservoir). No figures are available for other fishing areas or for waterfowl hunting.

According to the 1977 Idaho Outdoor Recreation Plan, hunting and fishing are stable, no growth activities which will change only as population changes. Modified by the Idaho Department of Fish and Game Region 5 Policy Plan, which considers future habitat limitations and shorter seasons, that principle has been used to project participation rates for 1990 (assuming no change in management): 10,150 hunter days for mule deer, 6,000 hunter days for upland game and 10,600 fisherman days.*

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*Figures taken from Planning Area Analyses for the Bannock-Oneida Resource Area.

Accessibility of public lands for recreational pursuits is a prime concern at this time. *Physical access* poses no significant problem in the EIS area, though the presence of fences and gates does create an inconvenience for recreationists traveling through some areas. But since *legal access* has never been obtained on a large percentage of the roads, problems with access across private property occur occasionally. The extent of these problems (and inconveniences) could be affected by the various alternatives.

VIII. CULTURAL RESOURCES

Cultural resources may be classed as prehistoric or historic. Within the Bannock-Oneida EIS area, the prehistoric period is regarded as extending from about 15,000 years ago, the earliest scientifically dated evidence of man in Idaho, to the early 19th century, when trappers and explorers began to record local history in writing. In practical terms, cultural resources in this region are prehistoric when they pertain to pre-contact Native Americans, historic when they pertain to the present cosmopolitan culture.

The historic sites in the EIS area are not presently being affected to any significant degree, nor would they be by implementation of any of the alternatives. They will not, therefore, be discussed any further.

There are 47 recorded prehistoric cultural resource sites on BLM-administered lands in the EIS area: Curlew Allotment (24 sites), Big Onion (7), Pleasantview (6), Roy Arbon (3), Samaria (2), South Bull (1), Shoestring (1), Dairy Creek (1), Walker (1) and Cedar Mountain (1). These sites, which include the living and working sites of aboriginal American Indians, were identified or confirmed through Class I and Class II inventories conducted during 1976-78. The Class I "existing data inventory" was simply a search of accessible literature and records for information that might pertain to the history of the public lands. The Class II "sampling field inventory" was conducted over a two-year period when BLM Manual guidelines were being developed, so the methods used were not uniform throughout the EIS area. An intuitive method was used in the Curlew and Roy Arbon Planning Units, while the Malad Hills and Pocatello Planning Units were surveyed using a 5 percent random sample of 40-acre tracts, each of which was subjected to a grid search except where terrain features made that impractical. In addition, an intuitive survey was conducted of the areas around the selected 40-acre parcels. Where cultural resource values were suspected, a field search of the area was undertaken.

Isolated chips or artifacts were not recorded as archaeological sites. Only locations that appeared likely, in the surveyor's judgment, to yield information of importance to the scientific study of history or prehistory were recorded as cultural resource sites. The surveys, in any case, cannot be regarded as having much regional accuracy, since only public lands were considered.

In accordance with Executive Order 11593 and the National Historic Preservation Act (1966), identified sites are now being evaluated to determine their significance according to criteria listed in 36 CFR 800. Generally speaking, a cultural resource site is significant to the extent that it is likely to yield information important to the study of history or prehistory. Since such information can be lost or impaired if the sites are damaged, any projects, jobs or actions that might disturb these areas are regarded as having adverse impacts on cultural resources.

Damage to the cultural resource sites in the Bannock-Oneida EIS area has already resulted from heavy livestock use in areas around springs, from development of springs for livestock water, and from erosion due to overgrazing. Other impacts to cultural resources in this area have resulted from road construction, private collecting and burrowing animals.

IX. ECONOMICS

The trade area (geographic area in which the majority of goods and services are purchased) for the Bannock-Oneida EIS area has been identified as Bannock, Caribou, Oneida and Power Counties in Idaho, plus two counties in Utah, Box Elder and Cache, in which a large amount of trade and/or employment with the four Idaho counties occurs.

Income

Personal income in the trade area totaled $730.5 million in 1977. Of this, 6 percent or $41.2 million was farm income (Table 3-9). During the period 1972-1977 (with the effects of inflation taken out) farm income in the area declined by 37 percent while total income was rising by 25 percent (Bureau of Economic Analysis 1979).

Income generated by recreation expenditures has been estimated based on the relationship between total sales and income in the retail trade and services sectors of the economy. It was found that income in these two sectors approximated 29 percent of total sales. Applying this to the number of hunter and fisherman days and the average expenditures per day (State of Utah 1976) gives the following as an estimation of the income generated from hunting and fishing:

Fishing	$189,263
Upland Game Hunting	125,781
Big Game Hunting	475,805
	$790,849

More information on this process is on file and is available for public review at the BLM Burley District Office.

Employment

Total employment in the trade area was 72,490 in 1977. Nearly 11 percent (7,628) of this was in the farm sector (Table 3-10). Over the six-year period 1972-1977, farm employment rose slightly (5 percent) but not nearly as rapidly as the total employment in the trade area (24 percent) (Bureau of Economic Analysis 1979).

Within the trade area Oneida County has been designated as a "redevelopment area" by the Economic Development Administration, U. S. Department of Commerce. Based on a 25 percent outmigration during 1960-70, this designation makes Oneida eligible for assistance in attracting industry to increase employment opportunities.

Table 3-9

Personal Income ($000s)
Bannock-Oneida EIS Trade Area For 1977

(Estimates based on 1972 *Standard Industrial Classifications*)

INDUSTRY	BANNOCK	CARIBOU	ONEIDA	POWER	BOX ELDER, UTAH	CACHE, UTAH	TOTAL
Farm	$ 5,841	$ 3,892	$3,937	$ 3,548	$ 12,925	$ 11,039	$ 41,182
Non-Farm	295,494	41,722	6,710	52,876	122,774	169,746	689,322
Private	241,740	37,037	4,575	48,979	105,947	118,020	555,298
Ag. Serv., For., Fish	479	87	(D)	224	(D)	1,034	---
Mining	45	(D)	300	(D)	(D)	569	---
Construction	24,445	4,102	661	8,446	10,212	15,790	63,656
Manufacturing	47,254	(D)	272	32,743	65,411	43,161	---
Non-Durable	8,187	(D)	(D)	32,504	59,335	30,477	---
Durable	39,067	(D)	(D)	239	6,076	12,684	---
Transp. & Pub. Util.	55,727	1,755	(D)	2,218	2,540	6,959	---
Wholesale Trade	17,267	1,530	381	(D)	2,663	4,039	---
Retail Trade	37,107	2,911	1,139	1,532	10,874	19,291	72,854
Fin., Ins., Real Es.	20,949	939	680	417	3,196	5,581	31,762
Services	38,467	(D)	765	1,562	10,338	20,596	---
Govt. & Govt. Ent.	53,754	4,685	2,135	3,897	16,827	52,726	134,024
Federal, Civilian	7,198	702	426	395	4,409	4,479	17,609
Federal, Military	899	145	52	91	552	898	2,637
State and Local	45,657	3,838	1,657	3,411	11,866	47,349	113,778

(D) Not shown to avoid disclosure of confidential information; figures are included in totals.

SOURCE: Regional Economic Information System,
Bureau of Economic Analysis, U.S. Dept. of Commerce

Table 3-10

Bannock-Oneida EIS Trade Area
Employment by Type and Broad Industrial Source 1977

(Estimates based on 1972 Standard Industrial Classifications)

INDUSTRY	BANNOCK	CARIBOU	ONEIDA	POWER	BOX ELDER, UTAH	CACHE, UTAH	TOTAL
Total Employment	27,925	4,092	1,360	5,399	12,531	21,183	72,490
No. of Proprietors	2,111	765	562	620	2,027	2,716	8,801
Farm	630	518	439	415	1,266	1,465	4,733
Non-Farm	1,481	247	123	205	761	1,251	4,068
Wage and Salary Emp.	25,814	3,327	798	4,779	10,504	19,467	63,689
Farm	224	354	127	907	757	526	2,895
Non-Farm	25,590	2,973	671	3,872	9,747	17,941	56,922
Private	19,584	2,362	395	3,386	7,733	12,062	45,522
Ag. Serv., For., Fish	44	12	(D)	32	(D)	119	---
Mining	22	(D)	30	(D)	(D)	12	---
Construction	1,426	244	16	428	569	1,117	3,800
Manufacturing	3,352	(D)	26	2,207	3,819	3,933	---
Non-Durable	676	(D)	(D)	2,190	765	2,851	---
Durable	2,676	(D)	(D)	17	3,054	1,082	---
Trans.,Pub.Util.	2,964	107	(D)	164	161	482	---
Wholesale Trade	1,286	115	20	(D)	218	319	---
Retail Trade	4,981	375	142	214	1,629	3,179	10,520
Ins., Real Es.	1,676	77	41	35	216	547	2,592
Services	3,833	(D)	99	149	997	2,354	---
Govt. & Govt. Ent.	6,006	611	276	486	2,014	5,879	15,272
Fed., Civilian	440	53	31	29	479	276	1,308
Fed., Military	386	55	21	39	198	323	1,022
State & Local	5,180	503	224	418	1,337	5,280	12,942

(D) Not shown to avoid disclosure of confidential information; figures are included in totals.

SOURCE: Regional Economics Information System, Bureau of Economic Analysis, U.S. Dept. of Commerce

Table 3-11

Representative Ranch Budgets (1978) in the EIS Area

Size Group 1

			Average Per Brood Cow
INCOME:			
Livestock Sales	$10,318		$312
Crop Sales	5,760		174
Gross Income		$16,078	$487
CASH EXPENSES:			
Supplemental Feed	$ 1,250		$ 38
Veterinary Fees & Supplies	325		10
Livestock Purchased	2,500		76
Insurance	2,000		61
Marketing	1,000		30
Transportation	1,200		36
Labor	1,600		48
Taxes	1,680		51
Seed and Fertilizer	960		29
Machine Operation	2,055		62
Repairs	2,000		61
Utilities	2,070		63
Grazing Fees	200		6
Pesticides	2,500		76
Supplies	655		20
Miscellaneous	472		14
Interest	9,500		288
			$969
Total Cash Expenses		$31,967	
Net Cash Ranch Income		($15,889)	($481)
NON-CASH ITEMS:			
Inventory Adjustment	$4,875		$148
Depreciation	(6,100)		(185)
Perquisites	4,500		136
			$ 99
Total		$3,275	
Net Ranch Income		($12,614)	($382)
Off Ranch Income		10,000	303
Net Ranch Family Income		($ 2,614)	($ 79)

Size Group 2

			Average Per Brood Cow
INCOME:			
Livestock Sales	$20,813		$297
Crop Sales	1,460		21
Gross Income		$22,273	$318
CASH EXPENSES:			
Supplemental Feed	$ 1,000		$ 14
Veterinary Fees & Supplies	650		9
Livestock Purchased	4,525		65
Insurance	2,750		39
Marketing	100		1
Transportation	200		3
Contract Labor	1,000		14
Taxes	1,500		21
Seed & Fertilizer	1,200		17
Machine Operation	2,500		36
Repairs	3,500		50
Utilities	2,280		33
Grazing Fees	1,000		14
Miscellaneous	1,225		18
Supplies	2,500		36
Interest	7,000		100
			$470
Total Cash Expenses		$32,930	
Net Cash Ranch Income		($10,657)	($148)
NON-CASH ITEMS:			
Inventory Adjustment	$3,200		$ 46
Depreciation	(7,500)		(107)
Perquisites	4,500		64
Total		$ 200	$ 3
Net Ranch Income		($10,457)	($149)
Off Ranch Income		9,500	136
Net Ranch Family Income		(957)	($ 13)

Size Group 3

			Average Per Brood Cow
INCOME:			
Livestock Sales	$36,830		$171
Crop Sales	36,000		167
Gross Income		$72,830	$338
CASH EXPENSES:			
Supplemental Feed	$ 3,500		$ 16
Veterinary Fees & Supplies	800		4
Livestock Purchased	8,166		38
Insurance	1,750		8
Marketing	350		2
Transportation	350		2
Hired Labor	4,000		19
Contract Labor	450		2
Taxes	4,425		21
Seed & Fertilizer	4,500		21
Machine Operation	7,000		33
Repairs	3,500		16
Utilities	4,100		19
Grazing Fees	1,991		9
Miscellaneous	1,478		7
Supplies	4,000		19
Insecticide & Application	1,000		5
Interest	18,750		87
			$326
Total Cash Expenses		$70,110	
Net Cash Ranch Income		$ 2,720	$ 12
NON-CASH ITEMS:			
Inventory Adjustment	$ 0		
Depreciation	(14,000)		($65)
Perquisites	4,500		21
Total		($ 9,500)	($44)
Net Ranch Income		($6,780)	($32)
Off Ranch Income		4,000	19
Net Ranch Family Income		($2,780)	($13)

Size Group 4

			Average Per Brood Cow
INCOME:			
Livestock Sales	$84,641		$249
Gross Income		$84,641	$249
CASH EXPENSES:			
Land Rent	$ 2,000		$ 6
Supplemental Feed	2,000		6
Veterinary Fees & Supplies	1,500		4
Livestock Purchased	3,400		10
Insurance	4,500		13
Marketing	1,100		3
Transportation	5,000		15
Hired Labor	9,000		26
Contract Labor	2,000		6
Taxes	6,000		18
Seed & Fertilizer	5,750		17
Machine Operation	10,000		29
Repairs	6,000		18
Utilities	6,000		18
Grazing Fees	3,300		10
Miscellaneous	4,463		13
Supplies	6,000		18
Interest	13,000		38
			$268
Total Cash Expenses		$91,013	
Net Cash Ranch Income		($ 6,372)	($ 19)
NON-CASH ITEMS:			
Inventory Adjustment	$ 200		1
Depreciation	(25,000)		($82)
Perquisites	4,500		13
Total		($20,300)	($68)
Net Ranch Income		($26,672)	($87)
Off Ranch Income		0	0
Net Ranch Family Income		($26,672)	($87)

EIS Area Livestock Operators

There are 245 livestock operators who could be affected by the alternatives under consideration in this EIS. To facilitate economic analysis, these operators have been divided into four size groups:

Group	Herd Size	Number of Operators
1	0 - 49	77
2	50 - 149	83
3	150 - 299	49
4	300+	36

Ranchers in each group have been interviewed to obtain representative budgets (Table 3-11) which are taken to represent the "existing situation," the standard against which economic impacts will be measured in Chapter 4. The changes in Chapter 4 represent changes to net ranch cash income as measured against these budgets. The budgets for the four size groups indicate that 1978 was not a profitable year for those operators interviewed. Although cattle prices were fairly good in 1978, other factors apparently kept the ranchers from making money that year.

Note that since the Proposed Action would not affect sheep operations, economic analysis focuses on cattle operations or on the cattle portion of the total operation. The total cattle AUMs for the four ranching groups are:

Group	Current Active Preference (Cattle only)	Five-Year (1974-78) Average Use (Cattle only)
1	8,320	6,042
2	15,836	13,099
3	18,851	13,719
4	29,923	26,313
TOTAL	72,930	59,083

Impact analysis in Chapter 4 will be based on projected changes from the five-year average, since that is the number of AUMs the ranchers have been actually using.

X. SOCIAL CONDITIONS

The Bannock-Oneida Resource Area had a 1977 population of approximately 70,000 characterized by both urban and rural lifestyles. Pocatello, Idaho's second largest urban area, is located in the northern part of the study area, with the smaller communities of American Falls in the northwest and Malad in the southern part of the area. The resource area is not characterized by a dominant natural resource use. Extensive tracts of land are utilized for livestock and range purposes. Critical wildlife habitats are located within the area, outdoor recreation is a popular use of the land, and some mineral exploration and timber harvesting is occurring within the area.

Conflicts related to public land and grazing management are common. Existing grazing allocations are favorably viewed by members of the community whose economic livelihood and security are derived from cattle or ranching operations, but are seen as potentially harmful by those whose primary interest is aesthetics or recreation. These kinds of conflicts are likely to become more intense in southeast Idaho as the area continues to experience fairly rapid growth as well as enhanced popularity as a recreation area.

As part of BLM's planning process in preparation for the EIS, 38 unstructured interviews were conducted within the Bannock-Oneida EIS area to identify public attitudes and values potentially affected by BLM actions (Abt Associates 1979). Persons interviewed represented ranching, environmental groups, recreationists, businessmen, council of government, elected officials, citizens, educators and members of the Shoshone-Bannock tribe.

The respondents did not answer specific questions, but were encouraged to discuss issues of concern to them. The small sample size and method of data collection do not permit precise determination of the extent to which specific values are held by the community. Rather, the objective was to illustrate which values, related to multiple use management of the area, appear to be shared by many people and which are likely to clash with possible BLM actions.

General social values are expressed in many ways, such as satisfaction with community and neighborhood, educational facilities, health services, economic climate, recreation opportunities, religious institutions, etc. One major consideration is the way a person perceives his/her social situation. This perception, if it is positive, provides a sense of social well being. Living on a ranch provides a sense of well being for those who enjoy it, but a feeling of isolation for a person who does not like ranching. Both perceptions are real to the persons involved, even though they are opposite.

Economic Well Being

Perceived economic well being seems to fall in two distinct categories: (1) those whose economic livelihood is derived from ranch-related activities and (2) those who derive their livelihood from non-ranch-related activities.

Individuals whose economic standing could be radically changed by BLM decisions are understandably uneasy and do not have a strong feeling of well being. Conversely, those respondents whose economic picture could not be affected have strong feelings of well being.

A sense of economic well being in the Bannock-Oneida study area is highly dependent on the specific situation of the individual. Those whose livelihood depends, either directly or indirectly, on the cattle industry are likely to perceive a greater economic threat to themselves and the community as a result of BLM multiple use decisions than those whose livelihood depends on other means.

Social Well Being/Quality of Life

A ranching lifestyle has been described by some as one which will help few people to become rich but is a family oriented lifestyle which provides a good quality of life for those who choose it.

One factor which seems to provide an enhanced quality of life for southeastern Idahoans is the availability of a multitude of outdoor recreation activities. Several respondents, some of whom are ranchers, enjoy hiking; many hunt, fish and camp; a large percentage backpack; and many enjoy downhill and/or cross-country skiing. Some mentioned that their pleasure is derived from watching and observing wildlife. The size of the Pocatello Audubon

Society, with an active membership of about 100, attests to the popularity of this activity.

In addition to outdoor recreation opportunities, a number of cultural activities are available in Pocatello, both on a community basis and through Idaho State University.

Another indicator of social well being is satisfaction with local political processes and the ability to sway decisions made by elected officials and by government agencies such as BLM. Some respondents felt doubt in terms of the actual use of their input by decision makers and sometimes felt that decisions were finalized prior to public input. Some of these perceptions reflect respondents' positions in a general conflict for use of public land. For example, a member of a rod and gun club felt that decisions were oriented toward the grazing interests, while a rancher indicated that a deaf ear was turned to ranching concerns.

Another issue discussed with the respondents was quality of the range land. A majority of those making statements on the issue felt the range was deteriorating. A minority felt the range was improving. Again, ranchers who believe range condition is improving are aligned against other groups on this issue.

In summary, many of the attitudes identified have clearly placed one group in opposition to another group, where no middle ground has been found. A recurring theme throughout indicates that the ranchers are a cohesive group whose attitudes are consistently similar. The non-ranchers, a larger group in terms of numbers, include many diverse interest groups that have not joined together as a unified whole. The implications are that for BLM policy purposes, compromise solutions may be necessary as a means of resolving conflicting interests.

CHAPTER 4

ENVIRONMENTAL CONSEQUENCES

The organization of this chapter integrates the major headings from the two preceding chapters. Like Chapter 2, this one proceeds alphabetically by alternative. Within each alternative are analyses of the major resources (e.g., Soils, Water Resources, etc.), which appear here in the same order in which they were taken up in Chapter 3. Terms which appeared as resource subheadings in Chapter 3 are underlined in this chapter to facilitate trackability. The intent is to spell out, as exactly as possible, the kinds, degrees and specific causes of environmental impacts expected under each of the five alternatives.

Three basic components of the Proposed Action may affect the environment in the Bannock-Oneida EIS area: 1) Vegetative Allocation, 2) Grazing Management, 3) Range Development. For the purposes of impact analysis, it is assumed that these three impact-causing components are discrete. It is also assumed that the same components are appropriate categories for analysis under all alternatives, even in cases where their relevance is merely comparative. For example, Alternative E may show impacts under "Range Development" despite the fact--and because of the fact--that no such development is proposed in that alternative. To assume otherwise is to neglect a significant basis for comparison between alternatives.

Comparison is fundamental to environmental assessment. Alternatives are evaluated by comparing predicted impacts. Predicted impacts are calculated by comparing the "existing situation" with situations projected to exist in the short- or long-term future. As used in this document, "short term" refers to the period 1981-84, "long term" to the period 1985-95. Short-term impacts, in the case of Alternatives A (Proposed Action) and B (Increased Livestock Use), are likely to be those resulting from initial vegetative allocation, construction of range developments and completion of land treatment projects. Long-term impacts are those projected to accrue through operation of the proposed grazing management systems. In the case of Alternative D (Decreased Livestock Use) short-term impacts are likely to result from initial vegetative allocation and construciton of wildlife range developments, while long-term impacts include those associated with changes in season of grazing use.

Where Alternative E is concerned, short-term impacts would be those stemming from existing vegetative allocation levels and stocking rates for livestock. Long-term impacts would be those projected to occur through continued operation of existing grazing systems and associated seasons of use. In the case of Alternative C, short- and long-term impacts would be those changes brought about by the cessation of livestock grazing and the allocation of additional forage to other values such as wildlife, watershed and aesthetics.

Vegetative Allocation is primary. As a basis for impact prediction, the *Animal Unit Months (AUMs)** that would be allocated to livestock under Alternatives A-D are measured against the existing situation (Alternative E). It is assumed that the existing situation, where livestock grazing is concerned, refers to the level of actual on-the-ground use, as established by livestock permittees during the five-year period 1974-1978, rather than to the existing level of active *grazing preference*. Thus, a figure of 65,149 AUMs (1974-1978 five-year average licensed use) becomes the standard against which the proposed and alternative allocations are compared.

Grazing Management refers to systems, treatments and seasons of use as distinct from allocation. Where Alternative A (Proposed Action) and Alternative B (Increased Livestock Use) and Alternative D (Decreased Livestock Use) are concerned, it is assumed that BLM would have the funding and manpower necessary to implement and maintain the grazing management proposed. In the case of Alternative E, it is assumed that BLM would have the funding and manpower necessary to maintain existing operations with regard to grazing management. Further, it is assumed that BLM would have the funding and manpower to monitor the public land to verify the level of impacts resulting from livestock use and to make adjustments in areas where multiple use objectives were not being met.

Range Development refers to construction projects (e.g., fencing, cattleguards, reservoirs, etc.) and to land treatments designed to increase forage production on public land in the EIS area. It is assumed that BLM would have the funding needed to undertake all such developments included in Alternatives A, B, and D. New development is not proposed under Alternative E, but it is assumed that funding would be available to maintain existing developments. In the case of Alternative C, it is assumed that BLM would have the manpower and funding to maintain those developments deemed beneficial for non-livestock use and to remove or dispose of those developments no longer suitable.

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*Terms appearing in italics are defined in the Glossary.

ALTERNATIVE A
(PROPOSED ACTION)

I. SOILS

FORAGE ALLOCATION AND GRAZING MANAGEMENT. The proposed changes in stocking rates and implementation of grazing systems would affect soil erosion rates through changes in vegetative cover. The Musgrave equation (BLM Manual 7317) was used to calculate the estimated changes in erosion rates (see Table 4-1). The degree of impact for any change in erosion rate is primarily dependent on the particular soil series found within the allotment. The allowable soil loss tolerance is dependent upon the depth, texture and nature of the underlying material. Generally, lithic soils less than 10 inches deep have a soil loss tolerance of about 1 T/A/Yr (ton per acre per year), shallow to moderately deep soils 2-3 T/A/Yr, and deep soils as much as 5 T/A/Yr.

The significance of changes in potential erosion rates is subject to interpretation. For present purposes, it is assumed that such changes, whether upward or downward, are "significant" when the projected erosion rates differ from present rates by more than 20 percent. Generally, those areas showing high erosion rates and critical *Soil Surface Factor (SSF)* values would reflect more significant changes than a similar change in an area currently untroubled. The analysis of impacts to soils requires that allotments with presently high erosion hazards be given special attention in considering the significance of projected impacts.

Under Alternative A (Proposed Action), 36 allotments containing 67 percent of the total public acreage would be expected to show a decrease in potential erosion rates as a result of lower stocking rates or implementation of a grazing system. Twenty-six other allotments (12 percent of the public land) would be expected to show increased erosion rates from decreased cover resulting from higher utilization rates or from continuation of existing use on range land in poor condition now (see Table 4-1).

Potential erosion rates under the Proposed Action would increase or stay the same on 30 percent of the total public acres. Many of these areas have potential or existing erosion hazards. Seven allotments presently having areas with critical SSF values (Map 3-3) are among those projected to show higher potential erosion rates under Alternative A; and in three of the seven--Inkom, Rapid Creek and South Bull--the increases would be significant (i.e., over 20 percent). Seven other allotments* would also have significant increases for a total of 6 percent of the area. There would also be significant decreases in potential erosion rates on 15 allotments** or 25 percent of the EIS area (see Table 4-1).

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*East Daniels, Moonlight Mine, Lund, Garden Creek, Soloago, Johnson, Trayis.

**Houtz Canyon, Side Canyon, Pleasantview, Walker, Hanzel Mountain, Big Onion, East Fork, 2 1/2 Mile, Bancroft, Tate Ind., Rocks, A. Brady, Cottonwood, Hatley Ind., Thompson.

Table 4-1

Potential Erosion Rates Under All Alternatives (Tons/Acre/Year)

Allotment	Present	Alt. A	Alt. B	Alt. C	Alt. D	Alt. E
Houtz Canyon	2.22	1.48	1.48	1.48	1.72	1.97
Table Mtn.	3.80	3.80	3.80	3.04	3.42	3.04
Cedar Ridge	2.52	2.52	2.52	2.16	2.28	2.16
Side Canyon	3.46	2.80	2.80	2.58	2.80	3.87
Cold Water	3.29	2.90	2.90	2.72	2.90	3.44
Register Rock	3.89	4.10	4.10	3.24	3.45	4.10
Rock Creek	4.21	4.49	4.49	3.93	3.93	4.49
Curlew	3.14	2.90	3.14	2.49	2.69	3.21
South Stone	1.81	1.81	2.17	1.45	1.57	1.81
South Bull	2.04	2.45	3.00	1.63	2.04	2.45
Pleasantview	1.65	1.20	1.20	0.75	0.90	1.65
Samaria	3.25	2.75	2.75	2.75	3.00	3.25
Walker	2.08	1.71	1.71	1.52	1.71	2.08
Madsen	2.87	2.87	3.06	2.68	2.87	2.87
Hanzel Mtn.	3.87	2.77	3.52	2.52	3.02	3.27
Big Onion	2.33	1.94	1.94	1.36	1.55	2.33
Cedar Mtn.	3.59	3.59	3.80	1.86	2.13	3.59
Dairy Creek	1.65	1.65	1.65	0.90	1.05	1.65
East Daniels	2.50	3.38	3.38	2.25	2.25	2.25
Deep Creek	0.67	0.62	0.62	0.62	0.67	0.67
East Fork	2.33	1.74	1.74	1.35	1.74	1.93
Roy Arbon	1.75	1.75	2.13	1.36	1.55	1.75
Indian Springs	1.83	1.66	1.99	1.16	1.49	1.99
Black Rock	1.50	1.50	1.50	1.29	1.50	1.50
Michaud Cr.	1.41	1.51	1.58	1.30	1.30	1.41
2 1/2 Mile	1.12	0.78	0.78	0.78	1.00	1.12
Moonlight Mine	1.17	1.61	1.80	1.17	1.31	1.17
Rapid Creek	1.17	1.46	1.60	1.02	1.02	1.02
Inkom	1.60	2.83	3.50	0.99	1.13	1.13
Stanger	1.04	1.04	1.04	0.86	0.86	1.04
Shoestring	1.92	2.24	3.52	1.12	1.92	1.92
Bullock	3.04	2.63	2.63	2.63	2.63	3.04
Goodenough	2.64	2.23	2.23	1.82	2.23	2.64
McCammon	2.43	2.63	2.60	1.82	2.02	2.02
Price	1.88	2.04	2.15	1.56	1.73	2.04
Toponce	4.03	3.64	4.80	2.83	3.24	4.03
Hebdon	2.10	2.10	2.66	1.82	2.10	2.10
Taylor	3.08	3.59	4.85	2.39	2.73	3.24
Bancroft	3.21	2.56	2.56	2.56	2.77	3.21
Wististen	2.90	3.30	2.30	2.50	2.90	2.90
Fish Creek	2.16	2.34	2.50	1.62	1.98	1.98
Rowsell	3.49	3.13	3.13	2.61	3.13	3.13
Lund	1.89	2.31	2.31	1.05	1.47	1.69
Crystal	1.76	1.91	1.91	1.18	1.32	1.46
Swim	1.53	1.70	3.40	1.36	1.70	1.36
Tate Ind.	2.26	1.88	1.88	1.63	1.88	2.26
Myler	2.82	2.96	3.84	2.22	2.52	2.96
Garden Creek	0.85	1.11	1.30	0.78	0.85	0.85
Stewart Ind.	1.70	1.70	1.80	1.46	1.58	1.70
Soloago	1.19	1.87	2.04	1.02	1.19	1.02
Rogers Ind.	2.21	2.21	2.55	1.87	2.04	2.21
Hatley	3.24	3.24	3.24	2.34	2.88	3.24
Preslar Ind.	2.70	2.88	3.24	2.16	2.70	2.70
Rocks	1.35	0.98	0.98	0.85	0.85	1.35
Johnson	2.72	3.49	3.90	2.52	2.52	2.52
Anderson	2.53	2.72	3.00	2.53	2.53	2.53
Howe	2.71	2.37	2.37	2.20	2.20	2.71
L. Allen	1.02	1.15	1.53	0.89	0.89	1.15
B. Almond	2.29	2.16	2.16	1.91	2.03	2.29
T. Bloxham	1.00	1.00	1.80	0.95	1.00	1.00
A. Brady	1.11	0.72	0.73	0.89	0.94	1.16
C. Criddle	3.51	3.07	3.00	2.92	2.92	4.97
Cambridge	4.30	3.87	3.87	3.22	3.22	5.15
Casperson	4.19	3.87	3.87	3.09	3.25	3.87
Criddle and Sons	1.93	1.93	2.28	1.40	1.58	1.93
R. Davis	2.09	1.84	1.84	1.66	1.78	2.09
Egan	1.49	1.30	1.61	1.24	1.24	1.61
Cottonwood	2.99	2.29	2.29	2.11	2.29	3.17
A. Evans	3.96	3.41	3.41	2.73	2.86	3.96
W. Fuhriman	3.96	3.96	3.96	3.55	3.55	3.96
D. Hadley	0.41	0.38	0.38	0.35	0.36	0.45
Hatley Ind.	2.99	2.46	2.46	2.28	2.28	3.16
G. Jensen	4.20	3.91	3.91	3.04	3.77	4.78
S. Kent	1.79	1.60	1.66	1.29	1.29	1.66
Larson	1.22	1.22	1.42	1.12	1.12	1.22
McNee	2.90	2.90	2.90	2.22	2.39	2.90
Marley	2.58	2.58	2.90	2.24	2.24	2.58
P. Morrison	1.22	1.09	1.22	0.91	0.97	1.22
W. T. Evans	1.53	1.53	1.70	1.28	1.40	1.53
Rt. Hand Grazing	4.95	5.12	5.12	3.58	3.75	5.12
Salveson	2.56	2.56	3.07	2.05	2.22	2.56
Servoss Bros.	4.90	4.90	5.30	4.56	4.73	4.90
Thompson	3.60	2.70	2.70	2.34	2.52	4.50
Tippits	3.70	3.70	3.70	3.44	3.70	3.70
L. Roberts	4.95	4.95	4.95	4.44	4.61	4.95
Etcheverry	2.47	2.47	2.47	2.47	2.63	2.47
Trayis	0.89	1.23	1.35	0.89	1.01	0.89
Downey Watershed	2.16	2.16	2.16	1.98	1.80	1.98
WEIGHTED AVEAGE	2.44	2.25	2.39	1.81	1.98	2.41

In terms of overall watershed protection, it is expected that four allotments--Rapid Creek, Stanger, 2 1/2 Mile and Moonlight Mine--would be able to maintain 60 percent plant and litter cover. These four allotments comprise 2 percent of the total public land acreage in the EIS area.

RANGE DEVELOPMENT. Most of the adverse impacts of the proposed developments would be short-term (see Table 4-2), since vegetation disturbed during construction would recover in a short time. Fencing the developed springs and headboxes would have beneficial impacts by excluding cattle from these areas, preventing compaction and streambank erosion.

Long-term impacts from the proposed improvements would mainly be due to the placement and use of 28 water troughs, including eight associated with the spring developments, two associated with the rainfall catchments and two associated with reservoirs. Soil erosion potentials, productivity and compaction would be adversely affected. The area disturbed in placing water troughs would be 0.01 acre per unit, but the total area affected from the use of each trough would be 1.3 acres or a combined total of 36 acres. Erosion rates are estimated to increase, as shown in Table 4-2, as a result of trampling and intensive grazing of the vegetation around the water troughs. Within these areas soil productivity would decrease; virtually no vegetation would grow after livestock had initially trampled and grazed the existing plants. Compaction would increase, decreasing infiltration rates and increasing runoff potential.

Land treatments proposed under Alternative A would have limited impacts. Studies by Johnson, Schumaker and Smith (1979), Gifford (1973) and Hessary and Gifford (1979) indicate no significant changes in plant and litter cover would result from the chaining, burning or spraying projects. Two of these treatments, however, would result in short-term impacts by adversely changing potential erosion rates.

Areas totaling 6,686 acres are proposed for herbicide spraying under this alternative. Short-term estimated erosion increases would be found on soils with slopes greater than 30 percent, as indicated in the Reynolds Creek Watershed Study (Johnson, Schumaker and Smith 1979). Approximately 15 percent of the proposed spray area has slopes over 30 percent.

The one area of burn and drill seeding would be in the Curlew Allotment. Short-term adverse impacts would result in an erosion potential increase from 0.26 to 1.4 T/A/Yr, until the seeding became established (one to two years). This increased estimated erosion rate, as calculated by the Musgrave equation, reflects cover loss. Actual losses could be higher due to the reduced infiltration rates of *hydrophobic soils* which result from hot sage fires (Salih 1979). The proposed drill seeding would disturb the sealed soil surface causing increased infiltration.

Summary. Stocking rate decreases and the implementation of grazing systems would have beneficial impacts on 67 percent of the public land by reducing potential erosion rates (from increased cover). Fifteen allotments with 25 percent of the public land would have significant decreases in potential erosion rates. An estimated 12 percent of the area would show increased erosion rates. Significant increases in estimated erosion rates would occur on 10 allotments; these would be long-term adverse impacts affecting 6 percent of the public land. The EIS area would have an overall erosion rate of 2.25 T/A/Yr, or an 8 percent improvement from the present condition. The proposed range

TABLE 4-2

EFFECTS OF RANGE DEVELOPMENTS ON EROSION RATES

Development	Short Term Impact		Long Term Impact		Present Estimated Erosion rate (T/A/Yr)
	Acres Disturbed	Change in Estimated Erosion Rate (T/A/Yr)	Acres Disturbed	Change in Estimated Erosion Rate (T/A/Yr)	
Troughs (16)	Cumulative	→	20	+3.6	0.90
Spring Development* (8)	2.8	+ 9.7	10.08	+5.98	0.96
Catchments (2)	1.00	+14.67	2.52	+9.2	0.77
Reservoirs (2)	2.50	+14.67	2.52	+9.2	0.77
Pipeline (15.5 Miles)	9.39	+10.62			1.18
Fence (14 Miles)	16.80	+14.90			1.47

*Short-term impacts would be those associated with the actual development of the springs, whereas long-term impacts would be those accruing from the use and placement of troughs located near the springs. The same distinction holds true for catchments and reservoirs.

developments would result mainly in short-term adverse effects from the disturbance of the soil and the alteration of the vegetative community on a total of 20,758 acres. These erosion rates would be expected to decline to present rates as vegetation returned on disturbed sites. Long-term adverse impacts would result from the placement and use of 28 water troughs. The area around the water troughs, a total of 36 acres, would receive increased usage, resulting in increased potential erosion, increased compaction and decreased soil productivity.

II. WATER RESOURCES

VEGETATIVE ALLOCATION AND GRAZING MANAGEMENT. As a result of vegetative allocation and implementation of grazing systems, protective vegetative cover would be expected to increase on 70 percent of the public land in the EIS area, and 52 percent of the area would show improvement in range condition.

Although very few studies have measured runoff from small localized areas grazed at different intensities, Hanson, Kuhlman and Lewis (1978) found differences in mean annual and summer runoff, with the lower range condition producing more runoff. This suggests that localized improvements and declines in range condition on 78 and 3 percent of the EIS area respectively would affect runoff-related problems. The changes in range condition are probably not large enough to cause any major change in regional water runoff. There is insufficient data to determine quantitative differences. At best, watershed improvement would reduce flood hazards by reducing runoff and diminishing peak discharges. In the worst case, areas in declining condition would become more susceptible to excessive runoff, thus complicating existing sediment problems.

Localized impacts could be significant in the erosion-sediment hazard areas and other areas identified on Map 3-5. Fifty-four percent of the area important to water resources would show a significant improvement in watershed condition, while about 16 percent would show a significant decline (see Table 4-3). This assessment is based on a consideration of projected changes in vegetative cover, erosion (sheet erosion), sediment yield and runoff.

Hawkins and Gifford (1979) have shown a strong correlation between infiltration and grazing intensity. In addition, watershed recovery times are important in determining at what rate infiltration will increase during rest periods provided by grazing systems. The proposed grazing systems would provide for up to 1 1/2 years of rest on many pastures, but watershed recovery times would be expected to be well above those necessary to cause significant (10 percent) changes in infiltration. In addition, stocking rates would be such that utilization on key forage species would not likely fall below 40 percent, which is prerequisite for major improvement in infiltration. As a result, no widespread change in infiltration would be expected under Alternative A.

The Proposed Action could cause significant changes in sediment yields from some allotments. Generally, though, the overall change within a stream system would be inconsequential due to the small streamside acreages affected and the relative unimportance of range land to overall sediment problems. But local impacts on fisheries, aesthetics, and other related resources could be significant.

Few studies have evaluated the impacts of grazing systems on water sediment production. Much of the sediment problem in the EIS area results as channel erosion, and Alternative A would not likely have any significant

Table 4-3

Summary of Projected Changes in Watershed Conditions on Allotments

Important to Water Resources

		Present Situation		Alternative A					Alternative B					Alternative C					Alternative D					Alternative E				
Allotment	Waters Near Allotment	Total Acres	% in Fair & Poor Range Condition	cover	erosion	sediment yield	runoff	overall water-shed rating	cover	erosion	sediment yield	runoff	overall water-shed rating	cover	erosion	sediment yield	runoff	overall water-shed rating	cover	erosion	sediment yield	runoff	overall water-shed rating	cover	erosion	sediment yield	runoff	overall water-shed rating
Pleasantview	Little Malad River	59,026	100	+	++	0	+	+	-	-	0	-	-	++	++	+	+	+	++	++	+	+	+	0	0	0	0	0
Toponce	King Creek	4,291	10	0	+	0	0	0	-	-	-	-	-	++	++	0	+	+	+	+	0	+	0	0	0	0	0	0
Shoestring	Goodenough Creek																											
	Walker Creek																											
	Birch Creek	2,281	31	-	-	-	-	-	++	++	0	0	+	++	++	0	+	+	0	0	0	+	0	0	0	0	0	0
East Fork	Upper Rock Creek	7,360	86	+	++	0	0	+	+	+	0	0	0	++	++	0	+	+	+	++	0	+	+	0	+	0	0	0
Black Rock	Portneuf River	11,141	17	0	0	0	0	0	-	0	0	0	0	+	+	+	+	+	0	0	0	+	0	0	0	0	0	0
Rapid Creek	Rapid Creek																											
	Portneuf River	3,051	0	-	--	-	-	-	-	--	0	-	-	+	+	+	+	+	0	+	0	+	0	0	+	0	0	0
Inkom	Portneuf River	5,511	42	-	--	-	-	-	--	--	-	0	-	++	++	0	+	+	+	++	0	+	+	+	++	+	0	+
Crystal	Crystal Creek																											
	Midnight Creek	5,240	34	0	0	0	0	0	--	-	0	0	-	+	++	+	+	+	+	++	+	+	+	0	+	0	0	0
Soloago	Garden Creek																											
	Mink Creek	3,438	11	--	--	-	-	-	--	--	-	-	-	+	+	+	+	+	0	0	0	+	0	0	+	0	0	0
Cedar Mtn.	Hawkins Creek																											
	Marsh Creek	2,001	0	0	0	0	0	0	0	0	0	0	0	++	++	+	+	+	+	++	+	+	+	0	0	0	0	0
Moonlight Mine	Moonlight Creek																											
	Rapid Creek	2,223	0	0	0	0	0	0	-	--	0	0	-	0	0	0	+	0	0	-	0	0	0	0	0	0	0	0
Bullock	Bell Marsh Creek	195	100	0	-	0	0	0	-	0	0	0	0	+	+	0	+	+	0	+	0	0	0	0	0	0	0	0
McCammon	Harkness Creek																											
	Crystal Srings	3,248	64	0	0	0	0	0	0	0	0	0	0	+	++	0	+	+	0	+	0	+	0	0	+	0	0	0
Rocks	Marsh Creek																											
	Robber Roost Creek	499	100	+	++	0	0	+	+	++	0	0	+	++	++	+	+	+	++	++	0	+	+	0	0	0	0	0
Davis	Marsh Creek	340	100	0	0	0	0	0	0	-	0	0	0	+	++	+	+	+	0	+	0	+	0	0	0	0	0	0
Evans	Marsh Creek	200	100	0	0	+	0	0	0	-	0	0	0	+	++	+	+	+	+	++	0	+	+	0	0	0	0	0
Jensen	Stockton Creek	33	100	0	0	0	0	0	0	-	0	0	0	+	++	+	+	+	++	+	+	+	+	0	+	0	0	0
Larson	Left Hand Fork																											
	Marsh Creek	40	0	0	0	0	0	0	-	-	0	0	0	+	0	0	+	0	0	0	0	+	0	0	0	0	0	0
Bancroft	Portneuf	11,000	15	+	+	0	0	0	+	+	0	0	0	++	+	+	+	+	+	+	0	+	0	0	0	0	0	0
Fish Creek	Portneuf	2,550	20	0	0	0	0	0	0	0	0	0	0	+	++	+	+	+	0	0	0	+	0	0	0	0	0	0
		123,668	Percent Change (Area)					54%+ 12%-					2%+ 67%-					98%+					65%+					4%+

*Cover = 0 is less than 6 percent change in vegetative cover
+, - is 6 to 10 percent change in vegetative cover
++, -- is more than 10 percent change in vegetative cover

Erosion = 0 is less than 10 percent change in erosion
+ is 10 to 19 percent reduction in erosion
- is 10 to 19 percent increase in erosion
++ is more than 20 percent reduction in erosion
-- is more than 20 percent increase in erosion

Sediment Yield = 0 is less than 10 percent change in sediment yield
+ is more than 10 percent decrease in sediment yield
- is more than 10 percent increase in sediment yield

Runoff = 0 is less than 10 percent change in infiltration
+ is more than 10 percent increase in infiltration and/or 20 years plus equalized return interval
- is more than 10 percent decrease in infiltration and/or 5 year or less equalized return interval

*Since much of the watershed response is tied to vegetative cover, change in cover is the major determinant in projecting changes in runoff, erosion and sediment yield. No reliable method for predicting cover response is known to exist; estimates were based on professional judgment, on known responses of similar areas under various stocking rates, and on unpublished data presented by Johnson, Schumaker and Smith (1979). For purposes of impact analysis, the estimates so derived are assumed to be correct.

positive or negative impact on the total sediment problem. But many studies (e.g., Duff 1967, Platts and Roundtree 1972) have noted a marked improvement in stream channel stability where livestock use was withdrawn from the stream corridor. Such improvement might do little for the overall stream sediment problem because of the small areas involved, but would reduce localized problems associated with sloughing stream banks. It is not known whether the rest provided by the grazing systems would improve streambank stability, since no conclusive studies on similar areas have been conducted. If the rest period exceeded the recovery time for the stream area, then improvements would result. Where stocking rates continued near current levels, physical streambank damage would continue to occur. The lack of sediment data makes quantification of the impacts nearly impossible. The figures and narratives presented in Table 4-4 are very general and are intended only to identify those streams where impacts would be most significant.

Most studies on water quality and livestock grazing have addressed the differences between grazed and ungrazed areas. Most of the allotments under Alternative A would be grazed at nearly the same intensities as presently established. Water quality indicators, especially bacteria, have been shown to respond to the presence of livestock near the water course. The Proposed Action would not change the season of use on most of the allotments; however, many pastures previously grazed every year would receive rest for up to 1 1/2 years (see Table 2-5). During these periods, bacteria levels would not be increased and would likely return to background conditions unless upstream pastures were being grazed.

Monitoring of the grazing systems is perhaps the only way to properly assess water quality impacts. As proposed by Alternative A, monitoring of water quality, yields, sediment production and infiltration would greatly improve the understanding of impacts in the area. As noted on page 4-2, grazing systems would be altered if problems were identified.

RANGE DEVELOPMENT. The proposed fencing on King Creek, Wiregrass Reservoir, Stockton Creek and Moonlight Creek would favorably affect watershed condition by improving streambank stability and reducing sediment problems.

The only land treatment area likely to affect water resources is adjacent to Marsh Creek and involves about 1,040 acres proposed to be chained and aerially seeded. Although long-term impacts would not be expected to adversely impact water resources, short-term impacts (less than two years after treatment) could increase sediment yield. However, the small area affected would not be likely to add significantly to the sediment loads of Marsh Creek.

No impacts on water quality would be expected. With respect to the spray treatments proposed near Deep Creek and Deadwood Creek, the application procedures and precautions proposed, as well as the relative fast absorption of the chemical (2,4-D) by soil, make it unlikely that the treatments would present any water quality problems.

Summary. Range condition would improve to good on 52 percent of the EIS area. A decline in watershed condition on less than 5 percent of the public land would adversely impact about 16 percent (five allotments) of the areas considered important to water resources, while the

Table 4-4

Alternative A - Impacts on Important Waters

Allotment	Acres	Water Source Potentially Impacted	Description of Impacts
Pleasantview	59,026	Little Malad River	Reduction of livestock use would cause increase of cover and a decrease in sediment, which could be significant to the total sediment load of Little Malad River. (Most of the river is separated from the public lands by farm land.)
Shoestring	2,281	Goodenough Creek	An 82 percent increase in authorized use would likely reduce watershed condition and increase sediment yield from the allotment. Increased numbers of livestock adjacent to the creek would further reduce bank stability and increase bacteria. Rest would not be expected to reduce impacts from sediment.
Rapid Creek	3,051	Rapid Creek, Portneuf River	A 20 percent increase in authorized use would likely reduce watershed condition and increase sediment yield from the allotment. Increased cattle numbers on the stream would decrease streambank stability. Increases in sediment production would probably not affect water quality in the Portneuf River.
Crystal	5,240	Crystal Creek, Midnight Creek	A small increase of sediment production from this allotment would occur. Increased livestock numbers would further reduce streambank stability and decrease vegetative cover, adding to whatever sediment problem currently exists.
Soloago	3,438	Garden Creek, Mink Creek	A 214 percent increase in five-year average licensed use would increase the sediment production of this allotment by an estimated 20 percent because of increased bank disturbance and decreased vegetative cover. This increase in sediment production would aggravate any existing problems.
McCammon	3,248	Harkness Creek, Crystal Spring (McCammon water supply.)	Increased livestock use would increase sediment production from the allotment. This increase would not be expected to significantly add to existing sediment problems or to have any significant impact on Crystal Spring.
Evans, Davis	540	Marsh Creek	Reduction in livestock use would reduce sediment yield from the allotment 10-26 percent. This would not likely have any significant beneficial impact on Marsh Creek because of the small area affected.
Rocks	499	Marsh Creek	(Same as above.)
Inkom	5,511	Portneuf River	Increase in livestock use could increase sediment yield 10 percent from the watershed. This would not be likely to significantly affect the Portneuf River because of the small area affected.

remaining 84 percent (15 allotments) would show no change or would improve. These changes would have localized effects, but would not be expected to significantly alter existing watershed or water quality conditions of the EIS area as a whole.

III. VEGETATION

VEGETATIVE ALLOCATION. Initial stocking rates under the Proposed Action (see Table 2-4) would serve to bring stocking in line with the inventoried carrying capacity of each allotment. For the EIS area as a whole, the 66,164 AUMs initially allocated for livestock grazing would represent a 2 percent increase over the five-year (1974-78) average licensed use. Reduced allocations on 133,277 acres would be offset by increased allocations on 272,789 acres.

Vegetation in the EIS area would benefit from this adjustment because, except in riparian areas (discussed below), the stocking rate under Alternative A would not exceed production on any allotment. Long-term increases in the livestock vegetative allocation--to 75,234 AUMs by 1995--would not be expected to present a problem, since these increases would be satisfied by additional forage projected to accrue through range developments and operation of grazing systems.

GRAZING MANAGEMENT. Much depends upon the seasons of use, grazing treatments and grazing systems that are employed under a specified stocking rate. The season of grazing is important because forage plants depend on carbohydrate reserves to start growth in the spring. Work done by E. L. Flory (cited in Stoddart and Smith 1955) indicates approximately 75 percent of the root reserves are used in the spring to produce the first 10 percent of the plant's annual growth. Grazing which removes herbage just prior to the onset of the dry season prevents normal food storage, development of roots and formation of buds (Stoddart, Smith and Box 1975).

The proposed changes in spring turnout dates (see Table 2-5) would have a significant beneficial impact on vegetation. Grazing would be delayed--from 5 to 45 days--on 177,717 acres which are currently grazed too early to allow the plants' physiological requirements to be met. When plants are not grazed until they have had an opportunity to replenish carbohydrate reserves, the vigor or health of the vegetation is improved and productivity is thereby increased.

Grazing treatments and systems, since they also affect the physiology of forage plants, are likewise significant factors in impact analysis. With the obvious exception of Alternative C, all alternatives here under consideration would employ the same three grazing treatments: early grazing (i.e., before seedripe), grazing after seedripe, yearlong rest. There are differences, though, in acreage assigned for each treatment under the various alternatives. These differences are considerable, particularly when they involve sizeable changes in the acreage scheduled for early grazing.

Under Alternative A, adjustments in acreage proportions involved in three grazing treatments would prove beneficial. Grazing treatments proposed (see Table 4-5) show a substantial reduction in the acreage assigned for early grazing. This change would increase the rate of regeneration among the forage plants. Grazing after seedripe allows--and even helps--seed dissemination and planting. The yearlong rest treatment usually follows the seedripe treatment and assures the new seedlings an opportunity to become established. The yearlong absence of grazing use also increases vigor, ground cover and litter. Range studies on a rested area in the Pleasantview Allotment show a 2.8 percent increase in litter after one year of rest.

Table 4-5

Grazing Treatments

	Treatment					
	Early Grazing (Prior to Seedripe)		Grazing after Seedripe		Yearlong rest	
Status	Acres	%	Acres	%	Acres	%
Present	316,985	73	59,581	14	54,942	13
Future	228,077	53	144,708	33	58,723	14

All alternatives being analyzed, with the exception of the "No Grazing" alternative, would employ the same four grazing systems: rest rotation, deferred rotation, deferred grazing, seasonal grazing.* As was the case with treatments, differences in acreage proportions would mean differing impacts on vegetation in the EIS area. Generally speaking, the lower the percentage of range involved in seasonal grazing, the more favorable the effect on vegetation. Seasonal grazing use is restricted to the same season each year, usually beginning with an early spring treatment and continuing throughout the grazing year. Early and continued grazing reduces plant vigor, which in turn reduces the plants' ability to reproduce and to produce ground cover and litter.

Alternative A would have favorable effects on vegetation by greatly reducing the acreage grazed on a seasonal use basis. The 219,088 acres currently assigned for seasonal use would be reduced to 31,482 (see Table 4-6). There would be a sizeable increase--from 25,566 acres to 197,942--in the acreage managed through deferred rotation, along with a slight increase in rest rotation acreage and an even slighter increase in acreage assigned for deferred use. The end result would be a more intensively managed vegetation resource, which would lead to substantial improvement in range condition and trend.

Table 4-6

Grazing Systems

	Rest Rotation		Deferred Rotation		Deferred Use		Seasonal Use	
Status	Acres	(%)	Acres	(%)	Acres	(%)	Acres	(%)
Present	146,062	35	25,566	6	28,808	7	219,088	52
Future	157,403	38	197,942	47	32,697	8	31,482	7

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*A fuller account of the grazing systems and treatments used in the Burley District is presented in Appendix C.

Table 4-7

Range Condition

Acreage

	Good		Fair		Poor	
Allotment	Present	Future	Present	Future	Present	Future
Houtz Canyon	722	2,350	1,628	617	617	0
Table Mtn.	0	0	925	925	115	115
Cedar Ridge	0	0	550	550	50	50
Side Canyon	0	0	120	120	0	0
Cold Water	0	0	152	152	0	0
Register Rock	0	0	80	80	0	0
Rock Creek	0	0	400	400	0	0
Curlew	15,484	101,091	85,607	30,351	37,982	7,631
South Stone	5,108	10,260	5,152	1,702	1,702	0
South Bull	0	4,938	4,938	0	0	0
Pleasantview	0	41,210	41,210	16,423	17,816	1,393
Samaria	1,664	17,015	15,351	8,268	8,268	0
Walker	0	0	486	486	66	66
Madsen	- - - - Small area figured in with Samaria - - - -					
Hanzel Mtn.	2,744	7,574	4,830	4,739	4,739	0
Big Onion	45	6,684	6,639	366	366	0
Cedar Mtn.	2,001	2,001	0	0	0	0
Dairy Creek	0	2,202	2,202	1,118	1,118	0
East Daniels	0	0	120	120	0	0
Deep Creek	0	0	161	161	0	0
East Fork	1,003	4,849	3,846	2,511	2,511	0
Roy Arbon	19,603	41,758	22,155	4,298	4,298	0
Indian Springs	1,618	9,491	7,873	916	916	0
Black Rock	9,059	11,141	2,082	0	0	0
Michaud Cr.	2,049	4,215	2,166	0	0	0
2 1/2 Mile	2,477	2,477	0	0	141	141
Moonlight Mine	2,223	2,223	0	0	0	0
Rapid Creek	3,051	3,051	0	0	0	0
Inkom	3,223	5,511	2,288	0	0	0
Stanger	548	548	0	0	0	0
Shoestring	1,581	2,281	700	0	0	0
Bullock	0	0	195	195	0	0
Goodenough	0	0	23	23	0	0
McCammon	1,164	3,248	2,084	0	0	0
Price	265	265	0	0	0	0
Toponce	3,837	4,291	454	0	0	0
Hebdon	791	791	0	0	0	0
Taylor	135	411	276	0	0	0
Bancroft	9,336	11,000	1,664	0	0	0
Wistisen	0	0	215	215	0	0
Fish Creek	2,042	2,280	238	270	270	0
Rowsell	0	0	40	40	0	0
Lund	5,208	5,569	361	0	0	0
Crystal	3,437	4,827	1,390	413	413	0
Swim	0	0	281	281	0	0
Tate Ind.	80	80	0	0	0	0
Myler	120	120	0	0	0	0
Garden Creek	40	317	277	0	40	40
Stewart Ind.	201	988	787	0	0	0
Soloago	3,061	3,438	377	0	0	0
Rogers Ind.	812	812	0	0	0	0
Hatley	229	229	0	0	0	0
Preslar Ind.	0	40	40	0	0	0
Rocks	0	0	499	499	0	0
Johnson	1,114	1,114	0	0	0	0
Anderson	0	2,012	2,012	348	348	0
Howe	0	0	80	80	0	0
L. Allen	0	0	509	509	11	11
B. Almond	0	0	0	0	53	53
B. Bloxham	0	0	0	0	80	80
A. Brady	0	0	0	0	40	40
C. Criddle	0	0	0	0	40	40
Cambridge	0	0	1,347	1,347	160	160
N. Casperson	0	0	440	440	0	0
Criddle and Sons	0	0	564	564	0	0
R. Davis	0	0	0	0	340	340
Egan	0	0	0	0	635	635
Cottonwood	0	0	480	480	440	440
A. Evans	0	200	200	0	0	0
W. Fuhriman	0	0	0	0	40	40
D. Hadley	0	0	0	0	80	80
Hatley Ind.	114	114	0	0	0	0
G. Jensen	0	0	33	33	0	0
S. Kent	0	0	0	95	95	0
Larson	40	40	0	0	0	0
McNee	0	0	120	120	40	40
Marley	254	254	0	0	0	0
P. Morrison	0	0	0	0	120	120
W. T. Evans	240	240	0	0	0	0
Right Hand Grazing	0	0	360	360	240	240
Salveson	1,519	1,519	0	0	0	0
Servoss Bros.	0	80	80	120	120	0
Thompson	0	0	1,340	1,340	0	0
Tippits	65	65	0	0	0	0
L. Roberts	0	0	120	120	0	0
TOTAL	108,307 (26%)	327,214 (78%)	228,547 (54%)	82,195 (19%)	84,310 (20%)	11,755 (3%)

Table 4-8

Range Trend

Acreage

	Upward		Static		Declining	
Allotment	Present	Future	Present	Future	Present	Future
Houtz Canyon	0	2,245	2,967	722	0	0
Table Mtn.	0	0	1,040	1,040	0	0
Cedar Ridge	0	0	600	600	0	0
Side Canyon	0	0	120	120	0	0
Cold Water	0	0	152	152	0	0
Register Rock	0	0	0	80	80	0
Rock Creek	0	0	400	400	0	0
Curlew	20,050	115,958	111,392	23,115	7,631	0
South Stone	3,258	6,854	8,704	5,108	0	0
South Bull	0	4,938	4,938	0	0	0
Pleasantview	34,467	57,633	23,166	1,393	1,393	0
Samaria	20,723	23,619	4,560	1,664	0	0
Walker	0	0	552	552	0	0
Madsen		- - - - Figured in with Samaria - - - -				
Hanzel Mtn.	8,699	9,569	3,614	2,744	0	0
Big Onion	7,050	7,005	0	45	0	0
Cedar Mtn.	0	0	2,001	2,001	0	0
Dairy Creek	3,320	3,320	0	0	0	0
East Daniels	0	0	120	120	0	0
Deep Creek	0	0	161	161	0	0
East Fork	0	6,357	7,360	1,003	0	0
Roy Arbon	26,977	26,453	19,079	19,603	0	0
Indian Springs	424	8,789	9,983	1,618	0	0
Black Rock	0	2,082	11,141	9,059	0	0
Michaud Cr.	3,134	2,166	1,081	2,049	0	0
2 1/2 Mile	1,056	1,056	1,562	1,562	0	0
Moonlight Mine	1,590	0	633	2,223	0	0
Rapid Creek	0	0	3,051	3,051	0	0
Inkom	5,511	2,288	0	3,223	0	0
Stanger	548	0	0	548	0	0
Shoestring	2,281	700	0	1,581	0	0
Bullock	0	0	195	195	0	0
Goodenough	0	0	23	23	0	0
McCammon	3,248	2,084	0	1,164	0	0
Price	265	0	0	265	0	0
Toponce	4,163	454	128	3,837	0	0
Hebdon	791	0	0	791	0	0
Taylor	411	276	0	135	0	0
Bancroft	0	1,664	11,000	9,336	0	0
Wistisen	0	0	215	215	0	0
Fish Creek	0	508	2,550	2,042	0	0
Rowsell	0	0	40	40	0	0
Lund	0	361	5,569	5,208	0	0
Crystal	0	1,803	5,240	3,437	0	0
Swim	0	0	281	281	0	0
Tate Ind.	0	0	80	80	0	0
Myler	120	0	0	120	0	0
Garden Creek	277	277	80	80	0	0
Stewart Ind.	988	787	0	201	0	0
Soloago	3,438	377	0	3,061	0	0
Rogers Ind.	812	0	0	812	0	0
Hatley	229	0	0	229	0	0
Preslar Ind.	40	40	0	0	0	0
Rocks	0	0	499	499	0	0
Johnson	1,114	0	0	1,114	0	0
Anderson	2,360	2,360	0	0	0	0
Howe	0	0	80	80	0	0
L. Allen	0	0	520	520	0	0
B. Almond	0	0	53	53	0	0
T. Bloxham	0	0	0	80	80	0
A. Brady	0	0	0	40	40	0
C. Criddle	0	0	0	40	40	0
Cambridge	0	0	1,507	1,507	0	0
N. Casperson	0	0	440	440	0	0
Criddle and Sons	0	0	564	564	0	0
R. Davis	0	0	0	340	340	0
Egan	0	0	635	635	0	0
Cottonwood	0	0	0	920	920	0
A. Evans	200	200	0	0	0	0
W. Fuhriman	0	0	40	40	0	0
D. Hadley	0	0	80	80	0	0
Hatley	114	0	0	114	0	0
G. Jensen	0	0	33	33	0	0
S. Kent	95	95	0	0	0	0
Larson	40	0	0	40	0	0
McNee	0	0	160	160	0	0
Marley	0	0	254	254	0	0
P. Morrison	0	0	120	120	0	0
W. T. Evans	0	0	240	240	0	0
Rt. Hand Graz. Assoc.	0	0	600	600	0	0
Salveson	1,519	0	0	1,519	0	0
Servoss Bros.	200	200	0	0	0	0
Thompson	0	0	1,340	1,340	0	0
Tippits	65	0	0	65	0	0
L. Roberts	0	0	120	120	0	0
TOTAL	159,577 (38%)	292,518 (69%)	251,063 (60%)	128,646 (31%)	10,524 (2%)	0 (0%)

Table 4-9

Vegetation Cover

Allotment	Present Situation				Alternative A Proposed Action				Alternative B Increased Livestock Use				Alternative C No Grazing				Alternative D Decreased Livestock Use				Alternative E No Action			
	VEG. COVER	LITTER	BARE GROUND	ROCKS	VEG. COVER	LITTER	BARE GROUND	ROCKS	VEG. COVER	LITTER	BARE GROUND	ROCKS	VEG. COVER	LITTER	BARE GROUND	ROCKS	VEG. COVER	LITTER	BARE GROUND	ROCKS	VEG. COVER	LITTER	BARE GROUND	ROCKS
Houtz Canyon	18%	33%	29%	20%	25%	36%	19%	20%	25%	36%	19%	20%	28%	33%	19%	20%	24%	33%	23%	20%	18%	33%	29%	20%
Table Mountain*	19	10	61	10	19	10	61	10	19	10	61	10	23	14	53	10	22	13	55	10	23	14	53	10
Cedar Ridge*	18	10	62	10	18	10	62	10	18	10	62	10	22	13	55	10	21	12	57	10	22	13	55	10
Side Canyon*	21	10	53	16	25	16	43	16	25	16	43	16	28	26	40	16	26	16	42	16	20	9	55	16
Cold Water*	25	10	55	10	26	11	53	10	26	11	53	10	28	14	48	10	26	12	52	10	24	9	57	10
Register Rock*	25	10	55	10	23	9	58	10	23	9	58	10	27	12	51	10	26	11	53	10	23	9	58	10
Rock Creek*	23	10	51	16	22	9	53	16	22	9	53	16	25	12	47	16	24	11	49	16	22	9	53	16
Curlew	20	17	49	14	21	18	47	14	20	17	49	14	25	22	39	14	23	20	43	14	20	17	49	14
South Stone	19	19	51	11	19	19	51	11	16	16	57	11	24	24	41	11	22	22	45	11	20	20	49	11
South Bull	28	17	37	18	26	16	40	18	23	15	44	18	32	22	28	18	30	20	32	18	28	17	37	18
Pleasantview	29	20	36	15	33	25	27	15	33	25	27	15	38	35	12	15	35	30	20	15	29	20	36	15
Samaria	24	18	43	15	27	21	37	15	27	21	37	15	28	22	35	15	26	20	39	15	24	18	43	15
Walker	27	16	35	22	28	18	32	22	28	18	32	22	31	20	27	22	29	19	30	22	27	16	35	22
Madsen	24	9	52	15	24	9	52	15	24	9	52	15	26	12	47	15	25	12	48	15	24	9	52	15
Hanzel Mountain	24	14	42	20	21	12	47	20	21	12	47	20	28	18	34	20	26	16	38	20	24	14	42	20
Big Onion	26	21	39	14	29	24	33	14	29	24	33	14	35	28	23	14	31	26	29	14	26	21	39	14
Cedar Mountain	20	5	68	7	20	5	68	7	17	5	71	7	25	11	57	7	23	8	62	7	20	5	68	7
Dairy Creek	28	17	34	21	28	17	34	21	28	17	34	21	36	24	19	21	33	21	25	21	28	17	34	21
East Daniels*	23	10	60	7	18	8	67	7	18	8	67	7	26	13	54	7	25	12	56	7	25	12	56	7
Deep Creek*	22	10	47	21	25	15	39	21	25	15	39	21	26	13	40	21	25	12	42	21	22	10	47	21
East Fork	27	19	37	17	31	21	31	17	31	21	31	17	34	23	26	17	32	22	29	17	27	19	37	17
Roy Arbon	34	21	31	14	34	21	31	14	30	17	39	14	38	25	23	14	36	23	27	14	34	21	31	14
Indian Spring	31	17	36	16	33	19	32	16	33	19	32	16	35	23	26	16	33	21	30	16	30	16	38	16
Black·Rock	31	23	26	20	31	23	26	20	26	20	34	20	36	26	18	20	34	25	21	20	31	23	26	20
Michaud Creek	21	23	48	8	20	21	51	8	19	21	52	8	25	25	42	8	23	24	45	8	21	23	48	8
2 1/2 Mile	38	26	32	4	40	30	26	4	40	30	26	4	42	28	26	4	40	27	29	4	38	26	32	4
Moonlight Mine	42	30	28	0	40	27	33	0	39	26	35	0	44	33	23	0	41	29	30	0	42	30	28	0
Rapid Creek	44	28	27	1	41	25	33	1	40	23	36	1	47	31	21	1	46	30	23	1	45	29	25	1
Inkom	26	17	35	22	22	15	41	22	18	13	47	22	32	23	23	22	30	20	28	22	30	20	28	22
Stanger	47	21	20	12	48	22	18	12	48	22	18	12	51	25	12	12	49	23	16	12	47	21	20	12
Shoestring	27	15	37	21	23	11	45	21	20	10	49	21	33	20	26	21	27	15	37	21	27	15	37	21
Bullock	20	8	51	21	22	10	47	21	22	10	47	21	24	12	43	21	22	11	46	21	20	8	51	21
Goodenough	28	8	42	22	32	12	34	22	32	12	34	22	34	14	30	22	32	12	34	22	27	8	43	22
McCammon	23	12	37	28	20	10	42	28	18	9	45	28	27	15	30	28	25	14	33	28	25	14	33	28
Price	24	7	41	28	21	6	45	28	19	6	47	28	28	11	33	28	26	9	37	28	21	6	45	28
Toponce	29	9	60	2	31	12	55	2	19	6	73	2	35	15	48	2	33	13	52	2	29	9	60	2
Hebdon	20	8	53	19	20	8	53	19	17	7	57	19	24	12	45	19	22	10	49	19	20	8	53	19
Taylor	27	10	56	7	23	8	62	7	19	7	67	7	31	14	48	7	25	10	58	7	25	10	58	7
Bancroft	29	7	52	12	32	11	45	12	32	11	45	12	34	15	39	12	32	13	43	12	30	7	51	12
Wistisen	16	6	71	7	14	5	74	7	13	5	75	7	20	10	63	7	16	6	71	7	16	6	71	7
Fish Creek	24	11	39	26	22	10	42	26	21	9	44	26	29	15	30	26	26	13	35	26	26	13	35	26
Rowsell	8	7	59	26	10	9	55	26	10	9	55	26	12	11	51	26	10	9	55	26	10	9	55	26
Lund	17	24	29	30	15	21	34	30	14	20	36	30	22	28	20	30	20	26	24	30	20	26	24	30
Crystal	23	22	37	18	20	20	42	18	19	19	44	18	28	26	28	18	26	25	31	18	25	24	33	18
Swim Ind.	26	34	30	10	25	33	32	10	22	30	38	10	27	35	28	10	25	33	32	10	27	35	28	10
Tate Ind.	15	12	55	18	18	14	50	18	18	14	50	18	20	16	46	18	17	14	51	18	14	12	56	18
Myler	14	10	58	18	13	9	60	18	12	8	62	18	17	13	52	18	16	12	54	18	13	9	60	18
Garden Creek	26	11	45	18	20	8	54	18	20	9	53	18	29	14	39	18	26	11	45	18	26	11	45	18
Stewart Ind.	24	11	47	18	24	11	47	18	22	11	49	18	28	14	40	18	27	13	42	18	24	11	47	18
Soloago	27	28	23	22	21	22	35	22	19	20	39	22	32	31	15	22	25	25	28	22	30	30	18	22
Rogers Ind.	24	11	43	22	24	11	43	22	20	8	50	22	27	15	36	22	25	13	40	22	24	11	43	22
Hatley	11	12	55	22	11	12	55	22	11	12	55	22	15	15	48	22	13	13	52	22	10	12	56	22
Preslar Ind.	17	12	49	22	15	10	53	22	13	7	58	22	20	14	44	22	17	12	49	22	17	12	49	22
Rocks	12	6	35	47	16	10	27	47	16	10	27	47	19	13	21	47	17	12	24	47	12	6	35	47
Johnson	16	22	47	15	12	18	55	15	10	13	62	15	19	25	41	15	18	23	44	15	18	23	44	15
Anderson	21	13	44	22	19	11	48	22	16	9	53	22	21	13	44	22	20	12	46	22	21	13	44	22
Howe	19	5	54	22	21	10	47	22	21	10	47	22	23	12	43	22	22	11	45	22	18	5	55	22
L. Allen	35	27	28	10	34	26	30	10	29	21	40	10	38	30	22	10	36	28	26	10	34	26	30	10
B. Almond	17	23	56	4	18	24	54	4	18	24	54	4	20	26	50	4	19	25	52	4	17	23	56	4
T. Bloxham	21	12	63	4	21	12	63	4	16	9	71	4	24	15	57	4	23	14	59	4	21	12	63	4
A. Brady	9	27	60	4	13	30	53	4	13	30	53	4	14	29	53	4	14	28	54	4	9	25	62	4
C. Criddle	7	15	76	2	15	20	63	2	15	20	63	2	19	21	58	2	16	21	61	2	7	15	76	2
Cambridge	18	17	63	2	21	21	56	2	21	21	56	2	24	24	50	2	23	23	52	2	17	17	64	2
N. Casperson	17	12	67	4	18	13	65	4	18	13	65	4	20	15	61	4	19	14	63	4	18	13	65	4
Criddle & Sons	23	7	35	35	23	7	35	35	17	6	42	35	26	10	29	35	25	9	31	35	23	7	35	35
R. Davis	8	12	76	4	10	14	72	4	10	14	72	4	13	15	68	4	11	14	71	4	8	11	77	4
Egan	22	12	65	1	23	13	63	1	21	12	66	1	25	15	59	1	24	14	61	1	21	12	66	1
Cottonwood	28	15	55	2	33	20	45	2	33	20	45	2	35	22	41	2	34	21	43	2	27	15	56	2
A. Evans	11	15	70	4	14	17	65	4	14	17	65	4	16	19	61	4	15	18	63	4	10	14	72	4
W. Fuhriman	5	12	73	10	7	14	69	10	5	12	73	10	10	15	65	10	9	14	67	10	5	12	73	10
D. Hadley	14	27	55	4	16	28	52	4	16	28	52	4	18	30	48	4	17	29	50	4	14	25	57	4
Hatley Ind.	12	12	54	22	15	15	48	22	15	15	48	22	18	18	42	22	17	17	44	22	12	11	55	22
G. Jensen	11	15	72	2	13	17	68	2	13	17	68	2	15	19	64	2	14	18	66	2	10	14	74	2
S. Kent	11	16	69	4	14	16	66	4	11	16	69	4	16	18	62	4	15	17	64	4	11	16	69	4
Larson	23	27	40	10	23	27	40	10	20	24	46	10	26	30	34	10	25	29	36	10	23	27	40	10
McNee	11	25	54	10	11	25	54	10	11	25	54	10	15	29	46	10	14	28	48	10	11	25	54	10
Marley	13	15	50	22	13	15	50	22	11	13	54	22	16	18	44	22	15	17	46	22	13	15	50	22
P. Morrison	22	18	59	1	23	20	56	1	22	18	59	1	26	22	51	1	25	21	53	1	22	18	59	1
W. T. Evans	44	6	40	10	44	6	40	10	41	6	43	10	46	12	32	10	45	10	35	10	44	6	40	10
Rt. Hand Grazing	16	13	69	2	15	12	71	2	15	12	71	2	20	15	63	2	19	14	65	2	15	12	71	2
Salveson	28	14	48	10	26	15	49	10	21	13	56	10	32	20	38	10	30	17	43	10	26	15	49	10
Servoss Bros.	11	16	71	2	11	16	71	2	9	13	76	2	13	18	67	2	12	17	69	2	11	16	71	2
Thompson	22	13	62	3	28	20	49	3	28	20	49	3	30	22	45	3	29	21	47	3	21	12	64	3
Tippits	11	12	73	4	11	12	73	4	11	12	73	4	14	14	68	4	13	13	70	4	11	12	73	4
L. Roberts	11	15	72	2	12	16	70	2	12	16	70	2	14	18	66	2	13	17	68	2	11	15	72	2
Trayis*	40	28	30	2	37	25	36	2	35	23	40	2	41	29	28	2	39	28	31	2	41	29	28	2
Etcheverry*	25	18	52	5	25	18	52	5	25	18	52	5	25	18	52	5	24	17	54	5	25	18	52	5
Downey Watershed*	30	25	38	7	30	25	38	7	30	25	38	7	32	27	34	7	31	26	36	7	32	27	34	7
Isolated Parcels	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
WEIGHTED AVERAGE	25%				26%				25%				30%				28%				25%			

*No original data available. Values are derived from similar allotments.

Based on studies by Hyder and Sawyer (1951), Leithead (1960) and Heady (1961), it is projected that all allotments in the EIS area would improve over the long term by one condition class with exception of (1) those allotments already rated in good condition, (2) those presently in poor condition and showing a declining trend and (3) seasonal use allotments which do not now show an upward trend. Table 4-7 projects changes in range condition to the year 1995. A threefold increase in the acreage rated in good condition would be accompanied by reductions in the fair and poor classes. Together these changes in condition rating would generate a corresponding improvement in range trend (see Table 4-8). Vegetation production would also be favorably affected, but increases in productivity are best discussed in connection with the proposed land treatments.

Overall vegetation cover would be expected to increase slightly (see Table 4-9), although some allotments would show a decrease.

RANGE DEVELOPMENT. Alternative A includes provisions for various structural developments and land treatments. From a vegetative standpoint, the most important of these are the three types of vegetation manipulation that would be undertaken: chemical spraying (6,686 acres), chaining and aerial seeding (13,440 acres), burning and drill seeding (600 acres). These treatments would alter vegetation types by maximizing grass and forb production and decreasing the brush and tree density of the total vegetative composition, (see Table 4-10). Although the spray treatment would initially reduce the forbs and shrubs and emphasize grass productions, by 1995 the shrubs would have become re-established.

Table 4-10

Vegetation Type Changes by Land Treatments

	Sagebrush	Juniper	Mountain Shrub	Grass	Aspen	Maple	Douglas Fir	Greasewood
Present	230,258 ac.	79,678 ac.	11,158 ac.	28,828 ac.	28,468 ac.	4,941 ac.	34,413 ac.	3,420 ac.
Future	218,173 ac.*	77,723 ac.	11,158 ac.	42,868 ac.	28,468 ac.	4,941 ac.	34,413 ac.	3,420 ac.
Difference	-12,085 ac.	-1,955 ac.	0 ac.	+14,040 ac.	0 ac.	0 ac.	0 ac.	0 ac.

*The 6,686 acres of sagebrush spraying are not shown here.

Forage increases projected to accrue as a result of the land treatments are specified in Table 4-11. Those increases would contribute to an overall

Table 4-11

Vegetation Manipulation Impact Summary

		Composition (%)						Vegetative Ground Cover (%)		AUMs	
		Present			After Treatment			Present	After Treatment (15 years)	Present	After Treatment (15 years)
Type of Manipulation	Acres	Grass	Forb	Shrub	Grass	Forb	Shrub				
Aerial Spray Sagebrush	6,686	25	9	66	37	3	60	24	18	955	1,671
Chain and Aerial Seed (Sagebrush)	11,485	25	7	68	73	7	20	20	26	1,192	5,467
Chain and Aerial Seed (Juniper)	1,955	27	7	66	74	13	13	19	26	214	930
Burn Sagebrush and Drill Seed	600	27	6	67	73	10	17	21	21	68	286
Table Summary	20,726	25	8	67	62	6	32	21	23	2,429	8,354

Table 4-12

Vegetation Production

	Present		Projected		
Allotment	Total Biomass (Pounds)	Useable Forage All Classes of Animals (AUMs)	Total Biomass (Pounds)	Useable Forage All Classes of Animals (AUMs)	Net Change (AUMs)
Houtz Canyon	2,537,936	1,160	2,570,754	1,175	+15
Table Mountain	904,384	130	904,384	130	0
Cedar Ridge	521,760	85	521,760	85	0
Side Canyon	104,352	15	104,352	15	0
Cold Water	132,179	19	132,179	19	0
Register Rock	69,568	10	69,568	10	0
Rock Creek	347,840	50	347,840	50	0
Curlew	122,943,942	45,382	138,436,158	51,611	+6,229
South Stone	8,442,807	4,683	8,776,336	4,868	+185
South Bull	4,066,393	1,066	4,199,905	1,276	+210
Pleasantview	56,306,150	33,182	56,662,494	33,515	+333
Samaria	22,497,004	9,607	22,642,190	9,669	+62
Walker	421,757	194	421,757	194	0
Madsen	---------------------------Included in Samaria Allotment---------------------------				
Hanzel Mountain	13,957,998	5,690	14,468,236	5,898	+208
Big Onion	4,050,000	2,413	4,196,022	2,655	+242
Cedar Mountain	1,413,989	440	1,413,989	440	0
Dairy Creek	3,081,564	1,645	3,169,609	1,692	+47
East Daniels	118,920	15	118,920	15	0
Deep Creek	159,551	20	159,551	20	0
East Fork	7,342,577	2,566	7,471,344	2,611	+45
Roy Arbon	50,182,657	22,474	51,194,168	22,927	+453
Indian Springs	7,246,210	3,223	7,412,582	3,297	+74
Black Rock	12,731,013	4,861	12,846,249	4,905	+44
Michaud Creek	4,120,753	1,802	4,196,216	1,835	+33
2 1/2 Mile	2,606,738	1,075	2,606,738	1,075	0
Moonlight Mine	2,953,420	971	2,953,420	971	0
Rapid Creek	3,863,071	1,431	3,925,161	1,454	+23
Inkom	6,559,315	2,567	6,597,643	2,582	+15
Stanger	574,909	249	574,909	249	0
Shoestring	3,054,001	1,338	3,083,673	1,351	+13
Bullock	95,097	38	95,097	38	0
Goodenough	50,370	15	50,370	15	0
McCammon	3,535,868	1,238	3,535,868	1,238	0
Price	357,062	88	357,062	88	0
Toponce	4,527,852	2,560	4,595,062	2,598	+38
Hebdon	927,574	364	927,574	364	0
Taylor	394,202	154	394,202	154	0
Bancroft	8,572,851	2,993	8,644,458	3,018	+25
Vistisen	236,325	106	236,325	106	0
Fish Creek	2,893,391	1,066	2,974,818	1,096	+30
Rowsell	24,000	4	24,000	4	0
Lund	4,247,088	1,417	4,337,005	1,447	+30
Crystal	4,500,027	2,158	4,643,911	2,227	+69
Swim	310,323	163	310,323	163	0
Tate Individual	68,560	24	68,560	24	0
Myler	115,200	48	115,200	48	0
Garden Creek	500,110	203	500,110	203	0
Stewart Individual	1,076,842	460	1,076,842	460	0
Soloago	3,274,501	1,204	3,372,409	1,240	+36
Rogers Individual	1,480,192	561	1,480,192	561	0
Hatley	133,600	54	133,600	54	0
Preslar Individual	46,320	10	46,320	10	0
Rocks	2,173,934	358	2,173,934	358	0
Johnson	985,098	377	985,098	377	0
Anderson	978,437	907	978,437	907	0
Howe	59,626	10	59,626	10	0
L. Allen	663,200	226	663,200	226	0
B. Almond	29,036	13	29,036	13	0
T. Bloxham	38,800	5	70,790	37	+32
A. Brady	13,040	2	13,040	2	0
C. Criddle	9,600	2	9,600	2	0
Cambridge	1,003,798	520	1,003,798	520	0
N. Casperson	198,110	71	198,110	71	0
Criddle and Sons	464,928	173	464,928	173	0
R. Davis	160,770	36	266,380	168	+132
Egan	519,408	76	551,813	332	+256
Cottonwood	761,022	248	761,022	248	0
A. Evans	132,963	43	132,963	43	0
W. Fuhriman	16,650	2	29,010	15	+13
D. Hadley	19,550	9	19,550	9	0
Hatley Individual	96,560	35	96,560	35	0
G. Jensen	23,001	7	23,001	7	0
S. Kent	22,560	17	36,360	37	+20
Larson	58,212	19	58,212	19	0
McNee	101,500	25	115,540	74	+49
Marley	252,062	114	252,062	114	0
P. Morrison	63,618	25	93,118	60	+35
W. T. Evans	173,896	74	173,896	74	0
Rt. Hand Graz. Assoc.	494,240	205	502,040	279	+74
Salveson	1,474,681	553	1,474,681	553	0
Servoss	178,500	132	178,500	132	0
Thompson	467,161	176	467,161	176	0
Tippits	54,684	18	54,684	18	0
L. Roberts	84,000	25	84,000	25	0
TOTAL	392,452,758	167,794	412,117,555	176,864	+9,070

long-term increase in vegetation production under this alternative (see Table 4-12). Productivity is projected to improve on 31 allotments by a total of 9,070 AUMs (5,925 AUMs from land treatment and 3,145 AUMs from implementation of grazing management systems). This represents a 5 percent increase over current production.

In an indirect way, the structural developments proposed in Alternative A would also contribute to the rise in productivity, since these developments are needed in order to implement the grazing systems discussed above. Seen by themselves, however, the catchments, pipelines, etc., would have adverse impacts on vegetation (see Table 4-13). Most such impacts would be short-term, and all would be minor when compared to the gains to be achieved through improved distribution of the grazing livestock.

Table 4-13

Expected Acres Disturbed by Proposed Improvements

			Acres Disturbed per Unit		Total Acres Disturbed	
Range Improvements	Units	Total	Short term	Long term	Short term	Long term
Guzzlers	No.	2.00	0.25	0.01	0.50	0.02
Water Troughs	No.	16.00	0.01	0.01	0.16	0.16
Spring Developments	No.	8.00	0.35	0	2.80	0
Catchments	No	2.00	0.50	0.50	1.00	1.00
Reservoirs	No.	2.00	1.25	1.25	2.50	2.50
Pipelines	Miles	15.50	1.50	0	23.25	0
Fences	Miles	17.75	1.20	0	16.80	0
Cattleguards	No.	17.00	0.01	0.01	0.17	0.17
TOTAL					51.68 (100%)	3.85 (7%)

Included among the proposed developments are 2.7 miles of riparian fencing for portions of Stockton, Moonlight and King Creeks and the perimeter of Wiregrass Reservoir. A total of 7.4 acres of riparian vegetation would benefit from the protective fencing. But the remaining 138.6 acres of riparian vegetation would continue to be adversely affected by heavy livestock use. Although grazing management systems and reductions of livestock to the carrying capacity of each allotment would reduce the impact somewhat, livestock would still tend to congregate in riparian zones.

Summary. The Proposed Action would benefit vegetation in the EIS area by (1) adjusting stocking rates to the inventoried carrying capacity of the range land, (2) revising spring turnout dates so as to better satisfy the physiological needs of the forage plants, (3) implementing grazing systems designed to achieve a more even distribution of livestock use, (4) undertaking land treatments that would maximize grass and forb production on 20,726 acres, (5) fencing approximately seven acres of riparian vegetation so as to protect against further degradation caused by heavy livestock use.

There would be minor adverse impacts resulting from installation of the proposed range developments, and livestock would continue to congregate in the already severely impacted riparian zones on those 139 acres that would remain unfenced. Overall, however, this alternative would have a positive effect on vegetation. Range condition, trend, productivity and cover would all be expected to improve:

	Range Condition		
Status	Good	Fair	Poor
Present	108,307 ac. (26%)	228,547 ac. (54%)	84,310 ac. (20%)
Future	327,214 ac. (78%)	82,195 ac. (19%)	11,755 ac. (3%)

Range Trend

Status	Upward	Static	Declining
Present	159,577 ac. (38%)	251,063 ac. (60%)	10,524 ac. (2%)
Future	292,518 ac. (69%)	128,646 ac. (31%)	0 ac.

Vegetation Production

	Present	Future	Net Change
Total Biomass (lbs.)	392,452,758	412,117,555	+19,664,797
Useable Forage (AUMs)	167,794	176,864	+9,070

Cover

Present = 25% Future = 26%

IV. WILDLIFE

An adverse impact to wildlife is defined as any change which reduces population size below the existing carrying capacity of the habitat, increases population size above carrying capacity, or reduces existing carrying capacity. Beneficial impacts are defined as changes which restore depleted or oversized populations to carrying capacity or which increase carrying capacity for the species being considered.

Wildlife populations fluctuate according to a variety of environmental factors: quantity and quality of food, water and cover; climatic conditions; disease; social interactions, predation; and human activities. The total impact to wildlife populations would be a function of the interrelationships of the various environmental factors altered by the various alternatives.

Vegetative Allocation. The allocation of forage outlined in Table 2-4 would benefit most terrestrial species by adjusting grazing use to carrying capacity throughout the EIS area. The proposed livestock reductions in 32 allotments (7,228 AUMs) would provide additional forage for wildlife in those areas. The additional forage would result in decreased stress for all wildlife species dependent upon terrestrial vegetation for food and cover. Mortality and displacement would be lessened, and carrying capacity would be increased. Long-term benefits, however, would be limited by the fact that livestock use would be restored to current authorized levels on 10 of those 32 allotments over the long term.

The effects of the proposed vegetative allocation on the endangered, threatened, or sensitive wildlife species would be beneficial. The bald eagle and peregrine falcon, along with the bobcat, Canada lynx, kit fox and pigeon hawk, would benefit from the Proposed Action because of a more stable prey base. Other sensitive species in the EIS area would not be adversely affected.

The situation for big game would be varied. Vegetative allocation for present deer numbers would be deficient in nine allotments comprising 1 percent of the public land in the EIS area. In all instances the forage deficiency occurs in Section 15 allotments on the Downey Front (see table 4-14), where public lands are intermingled with State and private lands. A projected 263 AUMs of forage would be lacking. The projected shortages would be caused in part (57 AUMs) by natural vegetative limitations. On six of the allotments the estimated number of deer exceeds the capability of the range to provide the necessary forage, even if no livestock were permitted to graze. But for 69 of the 89 deer projected to be affected by the food shortage, the causal factor would be competition with livestock.

Table 4-14

Estimated Number of Deer Affected by Forage Shortages

Allotment	Acreage	Shortages Caused By: Lack of Vegetative Capability	Competition With Livestock
Criddle	40 acres	5 deer	1 deer
Cambridge	1,507	9	20
Casperson	440	3	11
Criddle & Sons	564	1	3
Evans	200	0	8
Larson	160	1	1
Thompson	1,340	1	19
Tippits	65	0	3
Roberts	120	0	3
Total	4,436 acres	20 deer	69 deer

Because of the importance of these Section 15 allotments, BLM coordination with adjacent private land owners and other agency administrators is a key to proper management. The capability of adjacent lands (private, State and National Forest) to absorb deer affected by the projected shortages is not known. Likewise, it is not known whether allotments with a surplus of available forage--the Downey Watershed and Etcheverry Allotments in particular--would be utilized by deer displaced from the deficient allotments. Predicting use patterns for big game species is a highly inexact science, since the distribution of these species varies from year to year, depending on climatic and other factors unrelated to forage supply. The most that can be said is that the EIS area as a whole would provide forage enough to satisfy 1985 population projections for mule deer if the necessary redistribution of deer could be achieved.

Antelope and elk would have more than enough forage. The allocation for the existing antelope (106 AUMs) and elk (552 AUMs) would be met. The projected increased demand of 60 AUMs of antelope forage and 90 AUMs of elk forage would be available by 1985.

Even though more forage would be made available for elk, a significant adverse impact is anticipated. The proposed long-term livestock vegetative allocation would increase livestock use by 5 to 214 percent depending on the allotment (Michaud Creek, Inkom, Crystal, Soloago and Johnson). These additional cattle would force elk to move to more inaccessible areas as well as increase stress during the livestock grazing season (May-September). This would be most significant in the Johnson and Soloago Allotments, which have had little livestock use in the past five years. Studies have shown that elk avoid areas used by livestock (Mackie, 1970) because of social intolerance.

The effects of vegetative allocation on upland game vary widely, depending on the season of use, stocking rate and the specific species of upland game being considered. Effects on sage grouse deserve special attention since this species would be significantly affected. Livestock grazing affects sage grouse habitat in several ways: (1) changes in vegetation composition, density, and structure, (2) disturbance of nesting hens, (3) removal of brood cover in meadows (Call 1979) and (4) removal from brood-rearing areas of the succulent forbs which are very important to young sage grouse (Klebenow and Gray 1968). Any management alternative which involves livestock grazing will adversely affect sage grouse through one or more of these four means.

Most upland game species, including Hungarian and chukar partridge, mourning dove, cottontail and pygmy rabbits, would benefit from the proposed vegetative allocation. But a rapid removal of forbs by livestock on spring and summer ranges would have an adverse impact on juvenile sage grouse, especially in those areas where forbs are scarce in the composition (Call 1979), as in the case in the Curlew Allotment. Sage grouse would benefit in those allotments where livestock reductions are proposed (Indian Springs, East Fork, Tate Ind., Rogers Ind., and Hatley Ind.). Conversely, detrimental impacts would increase on those allotments receiving an increase in livestock use (Curlew, South Stone, Inkom, Garden Creek, Hatley and Preslar). See Table 4-15.

Table 4-15

Proposed Action - Sage Grouse Crucial Area Evaluation

Grazing Systems	Allotment Name	Season of Use	% of Total Habitat	Population and/or Habitat Impacted[1]	Major Impact Source[2]
Rest Rotation	Curlew	4/16-6/19, 10/1-12/15	17	-B	S, N
	Toponce	5/21 - 10/20	1	+B	G
	South Stone	5/1 - 6/25	Trace	-B	N
Deferred Rotation	Indian Springs	6/16 - 9/30	3	+B	S, N, G
	Black Rock	5/1 - 6/20	1	+B	G
	Curlew	6/20 - 9/30	50	+B	G
	South Bull	5/16 - 8/15	Trace	0	0
	East Fork	6/1 - 9/30	3	+B	N, G
	Roy Arbon	5/16 - 10/15	21	0	0
	Inkom	5/16 - 8/31	2	-B	N
Seasonal Use	Hebdon	5/6 - 6/1	Trace	0	0
	Tate Ind.	5/10 - 9/30	Trace	+B	N
	Myler	5/16 - 9/15	Trace	0	0
	Garden Creek	6/16 - 10/15	Trace	-B	N
	Stewart Ind.	6/1 - 8/31	1	0	0
	Rogers Ind.	5/25 - 6/3	Trace	+B	N
	Hatley	5/16 - 9/30	Trace	-B	N
	Preslar Ind.	5/16 - 9/30	Trace	-B	N
	Hatley Ind.	5/16 - 9/30	Trace	+B	N

(1) P = Population
H = Habitat
B = Both

(2) S = Season of Use
N = Livestock Numbers
G = Grazing System

*All impacts are measured against the existing situation.

Sharp-tailed grouse would benefit in those alloments where livestock reductions are proposed (Pleasantview, Tate Ind., 2 1/2 Mile, Bullock and Goodenough), while adverse impacts would occur in those allotments scheduled to receive an increase in livestock use (Curlew, Hanzel Mountain, Crystal, Garden Creek, Soloago, Shoestring and McCammon).

A projected decline in aquatic wildlife habitat is due in large part to the allocations that are part of the Proposed Action (see Table 4-16). Substantial increases in livestock use would occur on the Shoestring (82 percent

Table 4-16

Changes in Fishery Stream Condition

Stream (Allotment)	Miles of Stream by Condition Class							
	Excellent		Good		Fair		Poor	
	Alt. A	Present	Alt. A	Present	Alt. A	Present	Alt. A	Present
Bell Marsh (Shoestring, Bullock)	-	.2	.2	-	.5	.5	-	-
Birch (Shoestring)	-	-	-	-	-	.3	.3	-
Crystal (Crystal)	-	-	-	-	.6	1.3	.7	-
Garden (Soloago, Preslar)	.5	.7	1.7	2.0	.5	.5	.5	-
Goodenough (Shoestring, Goodenough)	-	-	.3	.8	.5	-	.2	.2
King (Toponce)	.5	-	.1	.6	.1	.1	-	-
Harkness (McCammon)	-	-	-	-	-	-	1.1	1.1
Left Hand Fork Marsh (Larson)	-	-	-	-	-	-	.3	.3
Midnight (Crystal)	-	-	.5	1.3	1.1	1.1	.8	-
Moonlight (Moonlight Mine)	-	-	.3	-	.8	1.1	-	-
Mormon Canyon (Shoestring)	-	-	-	-	.3	.5	.2	-
Robber's Roost (None)	.4	.4	-	-	-	-	-	-
Stockton (Rt. Hand, Cottonwood)	1.0	.5	-	-	-	-	1.0	1.5
Upper Rock (None)	-	-	.3	.3	-	-	-	-
Walker (Shoestring, None)	-	-	.3	.3	-	.3	.3	-
Total	2.4	1.8	3.7	5.3	4.4	5.7	5.4	3.1

increase), Crystal (39 percent), Soloago (133 percent) and McCammon (91 percent) Allotments. Even in those allotments where livestock reductions are proposed, there would be no significant change in stream conditions because livestock still would tend to heavily utilize the riparian areas.

GRAZING MANAGEMENT. Proposed rest rotation and deferred grazing systems would be expected to improve rangeland conditions. Long-term increases in grass and forb production and decreases in shrub production would be expected under these systems. Wildlife species composition and use associated with vegetation changes could be altered according to changes in vegetation composition. The degree of impact would depend on the stress tolerance of the species, the degree of vegetation change and the availability of adjacent habitats to absorb displaced species. The carrying capacity for every wildlife species within a given area is finite. If a species is displaced into a habitat already fully occupied, one of two consequences can be expected: Either the population declines to the original carrying capacity or else over-utilization eventually depletes the habitat, which results in an even greater decline in population.

The Proposed Action would provide periodic rest from livestock use on some riparian areas and would eliminate livestock use on portions of King Creek, Stockton Creek, Moonlight Creek and Wiregrass Reservoir. Other riparian areas, primarily those covered by seasonal use grazing systems, would not be improved under the Proposed Action. A continued, long-term decline in carrying capacity for riparian-associated wildlife would be expected. (Seasons of use discussions are on a species or group of species basis in ensuing sections.)

Only certain sensitive species would be noticeably impacted by the various grazing systems proposed. The ferruginous hawk is very prone to nest desertion if subject to human disturbance during the egg incubation period (Howard 1974). Leon Powers has documented that the ferruginous hawk does use alternate nest sites (cited in Snow 1974). Thus, it is difficult to determine what portion of nest desertion can be directly attributed to the human activity associated with livestock grazing in the spring. Analysis of the long-billed curlew reveals a beneficial effect. The proposed increase in herbaceous vegetation and rested pastures would enhance curlew habitat, although early spring grazing (prior to June 1) would result in some nest trampling and/or abandonment.

The effects of grazing systems on big game vary according to species. Rest rotation systems are proposed for seven allotments containing 40,250 acres of mule deer winter range, and various deferred systems are proposed for 17 allotments containing 81,756 acres of mule deer winter range (Table 4-17).

The objective of any grazing system over continuous or season-long use is to improve range condition; however, depending on vegetation type and season of use, the opposite effect is possible. Researchers have shown that heavy livestock use in the early summer can increase vigor and production of browse species that are important as winter forage for mule deer (Jensen et al. 1974, Smith and Doell 1968). Midsummer to fall use in the same area can negate the benefits when domestic livestock shift to browse species as the grasses and forbs mature and lose nutritional value (Urness 1976). This shift to browse by cattle has been observed over much of the EIS area. The Proposed Action limits the use of important winter shrubs to less than 20 percent by domestic livestock, and that stipulation has been incorporated into all grazing systems as a part of the Proposed Action. This 20 percent figure is not an allotment average; it is a measure of utilization on the individual winter range areas. The remaining winter range, 17,748 acres, is on the seasonal use areas. The mitigations that have been incorporated into the Proposed Action should alleviate potential adverse impacts to winter habitat.

A review of Table 4-17 shows those allotments proposed for fall grazing that would impair mule deer winter ranges. Space and forage competition would occur on 17 allotments that contain approximately 33 percent of the total winter range on public land in the EIS area. Approximately 3,300 deer would be affected. The overall impact would be reduced deer productivity, the degree of which cannot be assessed. There would be little change from the existing situation in these areas. Serious conflicts are limited to the Curlew, Toponce, Shoestring, Roy Arbon, Garden Creek, Salveson and Larson Allotments. The Curlew problem centers around late domestic horse grazing. Late grazing in the Toponce Allotment would continue to put increasing grazing pressure on shrubs that are presently in a poor condition class. The Proposed Action would intensify the fall competition on winter ranges in the Shoestring and Garden Creek Allotments because of the 82 percent and 129 percent increases in livestock use that are proposed over the 15-year period. The Roy Arbon Allotment contains crucial winter range that is currently recognized as a "bottleneck" or limiting factor with respect to deer herd productivity. Fall grazing by livestock limits the amount of forage remaining for the wintering deer. This is especially evident during severe winters, when the deer are restricted to very limited winter use areas. The Salveson and Larson Allotments provide important winter habitat for a portion of the Downey Front deer herd. The bulk of the allotments that face mule deer reduction with respect to forage allocation are located along the Downey Front. Competition between livestock and mule deer would increase in those allotments over the 15-year period.

The portion of the Curlew Allotment inhabited by antelope is scheduled for inclusion in a series of three-treatment rest rotation systems. In the area being used by livestock, competition for forage, space and cover could cause fawns and lactating does to move to unused areas. Pyrah (1973) observed that

Table 4-17

Proposed Action - Deer Winter Range Evaluation*

Grazing System	Allotment Name	Season of Use	Percent of Total Habitat	Estimated Deer Numbers (1978)	(1) Population and/or Habitat Impacted	(2)MajorImpact Source
Rest Rotation	Pleasantview	5/15-9/14,9/15-10/14	9.1	400	+B	B
	Big Onion	5/20-9/19	.8	50	+B	N
	Curlew	4/16-6/19,10/1-12/15	4.0	50	O	O
	South Stone	5/1-6/25	3.6	725	O	O
	Toponce	5/21-10/20	1.6	300	-B	B
	Shoestring	5/1-10/15	1.2	150	-B	B
	Samaria	6/26-8/31	8.5	300	+B	B
Deferred Rotation	Curlew	6/20-9/30	29.0	395	-B	N
	Hanzel Mountain	4/21-11/30	1.0	250	-B	S
	Dairy Creek	5/16-9/15	.7	100	+B	N
	East Fork	6/16-9/30	2.5	300	+B	N
	Roy Arbon	5/16-10/15	8.9	1,400	-B	B
	Indian Springs	6/1-9/30	1.1	50	+B	N
	Black Rock	5/1-6/20	4.9	300	-B	S
	Michaud Creek	4/16-10/30	2.1	75	-B	B
	Rapid Creek	4/16-8/31	.7	75	-B	B
	Inkom	5/16-8/31	1.4	275	-B	N
	Crystal	5/16-10/15	.2	50	-B	B
	Soloago	6/1-8/23	.1	35	-B	N
	Houtz Canyon	5/16-8/31	1.5	23	+B	B
	South Bull	5/16-8/15	None	0	None	None
	Bancroft	6/1-9/30	2.6	600	O	O
Deferred Grazing	Curlew	6/20-10/1	.2	50	-B	N
	Fish Creek	5/16-10/31	1.2	100	-B	S
	Lund	5/16-6/30,9/21-10/20	.4	75	-B	S
Seasonal Use	Side Canyon	5/1-8/31	Trace	4	-B	S
	Cold Water	4/1-5/31	.1	4	-B	S
	Register Rock	7/20-8/30	Trace	7	O	O
	Walker	5/15-8/24	Trace	10	+B	N
	Madsen	5/1-6/30	None	0	None	None
	Cedar Mountain	4/20-5/19	.6	10	-B	S
	East Daniels	5/16-10/15	None	0	None	None
	Deep Creek	5/16-9/15	None	0	None	None
	2 1/2 Mile	5/1-10/31	.4	90	-B	S
	Moonlight Mine	5/16-6/3	.4	100	O	O
	Stanger	6/1-8/31	.3	50	+B	N
	Bullock	5/1-5/24	None	0	None	None
	Goodenough	5/25-6/25	None	0	None	None
	McCammon	5/16-11/30	1.4	175	-B	B
	Price	5/1-9/30	None	0	None	None
	Hebdon	5/16-6/1	.5	100	O	O
	Taylor	9/8-9/20	.2	60	O	O
	Wistisen	10/1-10/31	Trace	10	-B	B
	Rowsell	5/16-10/15	None	0	None	None
	Swim	5/1-6/30	.1	7	-B	S
	Tate Ind.	5/10-9/30	Trace	3	+B	N
	Myler	5/16-9/15	Trace	3	O	O
	Garden Creek	6/16-10/15	.1	10	-B	B
	Stewart Ind.	6/1-8/31	.1	20	O	O
	Rogers Ind.	5/25-6/3	.1	20	O	O
	Hatley	5/16-9/30	.1	10	+B	N
	Preslar	5/16-9/30	None	0	None	None
	Rocks	4/16-6/6	.1	20	+B	N
	Johnson	5/16-9/30	.4	70	-B	N
	Anderson	5/16-9/30	None	0	None	None
	Howe	5/1-5/31	None	0	None	None
	L. Allen	5/16-9/15	.1	9	O	O
	B. Almond	5/1-10/15	None	0	None	None
	T. Bloxham	4/16-9/30	None	0	None	None
	A. Brady	4/16-9/30	None	0	None	None
	C. Criddle	4/16-9/30	Trace	10	-B	S
	Cambridge	5/16-9/30	1.0	300	+B	B
	N. Casperson	5/16-9/30	.3	50	+B	B
	Criddle & Sons	4/16-9/30	.4	75	-B	S
	R. Davis	4/16-9/30	None	0	None	None
	Egan	4/16-9/30	None	0	None	None
	Cottonwood	5/16-9/30	.6	120	+B	B
	A. Evans	4/16-9/30	.1	25	-B	B
	W. Fuhriman	4/16-9/30	None	0	None	None
	D. Hadley	5/16-9/15	None	0	None	None
	Hatley Ind.	5/16-9/30	Trace	10	+B	B
	G. Jensen	5/1-9/30	Trace	3	-B	S
	S. Kent	4/16-9/30	None	0	None	None
	Larson	5/16-10/31	Trace	10	-B	B
	McNee	5/1-5/31	None	0	None	None
	Marley	6/1-9/30	.1	15	O	O
	P. Morrison	4/16-9/30	None	0	None	None
	W.T. Evans	5/1-9/30	None	0	None	None
	Right Hand Grazing	5/1-9/30	.3	30	-B	S
	Salveson	5/16-10/30	.7	175	-B	S
	Servoss Bros.	4/16-10/31	None	0	None	None
	Thompson	5/16-9/30	.5	100	-B	N
	Tippits	4/16-9/30	Trace	10	-B	S
	L. Roberts	4/16-9/30	.1	10	-B	S
	Rock Creek	3/1-5/31,11/1-1/15	.3	21	-B	S
Unallotted	Trayis	AS NEEDED	—	-----	--	--
	Etcheverry	AS NEEDED	.2	15	O	O
	Downey Watershed	AS NEEDED	—	-----	—	--
	Table Mountain	AS NEEDED	.7	8	O	O
	Cedar Ridge	AS NEEDED	.4	8	O	O

(1)
P=Population
H=Habitat
B=Both Population & Habitat

(2)
S=Season of Use
N=Livestock Numbers
B=Both Season of Use & Livestock Numbers

*All impacts are measured against the existing situation antelope moved from heavily grazed areas to ungrazed areas in central Montana. Since marginal fawn bed sites would have to be selected in the ungrazed areas, the displaced antelope would be more vulnerable to predation. Antelope remaining in the grazed area would experience increased stress from space and forage competition with livestock.

Present livestock use on the antelope-inhabited portion of the Curlew Allotment is spring/fall (April 16-June 19 and October 1-December 15). Spring is the critical time for antelope reproduction. Dietary overlap is also the greatest during this period, when livestock use reduces the forb and grass supply available to antelope (Pronghorn Antelope Workshop 1978). Fall livestock grazing can be detrimental to antelope winter range, as has been documented by research in Wyoming's Red Desert (Taylor 1975). But since the Proposed Action shortens the fall grazing period two months from December 15 to October 15 and only a third of the area would be grazed in any given fall, there would be increased availability of antelope feed and ample opportunity for the antelope to move to ungrazed areas.

Table 4-18 shows elk use by grazing system. The elk range in the Big Onion Allotment would be subject to a three-treatment rest rotation system. The rested area would provide non-competitive habitat for the elk, because the elk would be able to avoid the livestock use areas. Since elk use would largely occur in the rested field, the vegetative response of the grazing system could be slowed considerably. The two-treatment deferred rotation systems would not be as beneficial to elk as the rest rotation system since elk would have to move more in order to avoid livestock. Season of use conflicts would occur on Michaud Creek and Crystal Allotments.

Table 4-18

Proposed Action - Elk Winter and Yearlong Evaluation*

Grazing Season	Allotment Name	Season Of Use	% of Total Habitat	Estimated Elk Numbers (1978) Spring/Summer	Winter	Population and/or Habitat Impacts (1)	Major Impact Source (2)
Rest Rotation	Big Onion	5/20 - 9/19	13	15	20	-P, H	N
Deferred Rotation	Dairy Creek	5/16 - 9/15	12	10	0	+P, H	N
	Michaud Creek	4/16 - 10/30	18	0	15	-P, H	S
	Inkom	5/16 - 8/31	11	3	20	-P, H	N
	Crystal	5/16 - 10/15	23	4	25	-P, H	N
	Soloago	6/1 - 8/23	18	10	20	-P, H	N
Seasonal Use	Johnson	5/16 - 9/30	5	5	10	0	0

(1) P = Population
H = Habitat

(2) S = Season of Use
N = Livestock Numbers
B = Both Season of Use and Livestock Numbers.

*All impacts are measured against the existing situation.

The proposed grazing systems would have both beneficial and adverse impacts on upland game. Partridge, doves and rabbits would benefit from the improved rangeland conditions and the periodic rest treatments. But the rest rotation and deferred rotation grazing systems would concentrate livestock use in sage grouse nesting and brood-rearing habitat during the important brood-rearing period. Increased mortality from stress and nest desertion would occur in the grazed areas; however, this would be partially offset by higher production in the rest fields. Crucial nesting and brood-rearing habitat is broken down as follows with respect to the proposed grazing systems: (1) rest rotation 27,000 acres, (2) deferred rotation 119,000 acres, and (3) seasonal use 2,300 acres.

Riparian areas are highly preferred by sage grouse for brood rearing. Proposed rest rotation and deferred grazing systems would provide periodic rest of the riparian vegetation. Increased forage and cover on these areas would enhance sage grouse habitat during the rest treatment. Production could be high in the short term.

Livestock use prior to June 15 would conflict with nesting sage grouse since they nest from mid-April to early June. See Table 4-15 for an allotment analysis. Delaying grazing in the Indian Springs Allotment would benefit sage grouse. No other season of use changes are proposed with respect to the allotments that contain sage grouse.

Although low numbers and limited distribution have limited the opportunity for research on sharp-tailed grouse in Idaho, livestock grazing has been identified as one of the major causes of the general decline in sharp-tail populations. Agricultural development and widespread burning of the shrub/grassland communities have also contributed to the general decline. These birds prefer to nest under some type of overhead cover or near the base of a shrub. The plant species preferred for nesting are quite variable; however, quality and height of vegetation are similar. This grouse prefers to nest where the grass understory is at least 12 inches high. Successful nests are usually in ungrazed or lightly grazed pastures (Hillman and Jackson 1973, Rice 1977). It has been observed that residual vegetation and growth during the spring are both important factors in determining hatching success (Yde 1977).

The rest rotation and deferred systems proposed would benefit nesting sharp-tailed grouse, since residual grasses in lightly grazed or ungrazed pastures would be available for nesting. The same seasonal use conflicts apply to sharp-tailed grouse as those previously mentioned for sage grouse. The delay of grazing in the Myler Individual and the McCammon Allotments until May 16 would benefit nesting sharp-tailed grouse.

Riparian areas are important to sharp-tailed grouse. Shrubs associated with these areas serve as important cover and also provide an important food source (berries, growing buds, etc.). The proposed grazing systems would not enhance the shrub/tree component of the riparian community.

The main impact to furbearers and non-game wildlife would occur from early spring livestock use and concentrated grazing use under rest rotation grazing systems. The reduction of vegetation would reduce cover and small animal prey base productivity. Species such as white-footed mice and sage thrashers, which have small home ranges compared to the more mobile species such as coyotes and magpies, would be more severely affected. The overall increase in herbaceous vegetation resulting from the grazing systems would benefit most wildlife species. Exception would be those species such as pocket gophers and some amphibians which appear to be more abundant on depleted ranges.

Implementation of proposed grazing systems would not improve existing aquatic wildlife habitat conditions. This is primarily because riparian systems would not receive adequate rest.

Riparian areas are often a source of conflict between wildlife and domestic livestock. Riparian habitats receive more wildlife use per unit area than any other single vegetative type (Kelly et al. 1975), regardless of the grazing system. Periodic rest of riparian areas in allotments where rest and deferred rotation are employed may increase carrying capacity during the rest treatment; however, this increase is limited to only the time of the rest treatment. Platts and Roundtree (1972) and Eckert (1975) concluded that riparian vegetation receiving one year of rest did not recover adequately. Although pastures may recover with one year of rest, the stream banks do not. Without adequate protection, the natural replacement of decadent shrubs and trees in riparian habitats cannot occur.

The long-term loss of the canopy cover in a riparian habitat is detrimental to wildlife. According to Hormay (1970), "The growth of herbaceous plants is not affected significantly by grazing after reserves are stored. The reserves and growing points are out of reach of animals. In woody plants, however, reserves and growing points are exposed, and grazing after reserves are stored and during the dormant period can harm these plants. Removal of growing points does the most damage." In a 1976 memo to BLM's Rock Springs (Wyoming) District Manager, Hormay amplifies on the same point: "Vegetation in certain areas, such as meadows and drainage ways, [is] invariably closely utilized under any stocking rate or system of grazing. Such use may be detrimental to wildlife, aesthetic or recreational or other values. Where this is the case about the only way to preserve values is to fence the area from grazing. Reducing livestock or adjusting the grazing season usually will not solve such a problem."

RANGE DEVELOPMENT. Three types of vegetation manipulation are proposed for the EIS area: (1) chemical spraying (6,686 acres), (2) chaining and aerial seeding (13,440 acres) and (3) burning and drill seeding (600 acres). These treatments are all designed to increase grass and forb production on 20,726 acres.

The chemical spraying projects would increase understory production and largely eliminate the tree/shrub overstory on all sprayed areas. Over a 15-20 year period, big sagebrush would reinvade the treated areas, and current cover and forage condition would generally be reestablished.

The proposed chaining projects would increase the understory production and essentially eliminate the tree/shrub overstory in the treatment areas. The percent kill of big sagebrush would be less than that achieved via chemical spraying. The subsequent aerial seeding of the chained areas with perennial grasses, shrubs, and forbs would enhance the habitat for wildlife by increasing the variety of plant species available for forage and cover.

Burning would maximize the *edge effect*, improve understory production and maintain fingers and pockets of sagebrush cover. The area scheduled to be burned would be reoccupied by native vegetation, and wildlife species diversity would be enhanced. Some cover would be lost, but natural reseeding would allow big sagebrush to become reestablished. Drill seeding of perennial grasses and forbs would also enhance the wildlife habitat values.

Water developments would improve habitat where water is lacking. Creating fenced catchments, small reservoirs, and natural spring sources would provide excellent habitat and a non-competitive food source for varied wildlife.

The projected effect of proposed range developments on endangered, threatened, or sensitive wildlife varies because of the variety of developments and the wide range of wildlife species involved. One ferruginous hawk nest, one of 15 nest sites identified in Black Pine Valley, is located in an area proposed for chaining and aerial seeding. Based on the results of a similar project undertaken in the early 1970s, the project would probably result in the long-term abandonment of the nest. The spotted bat, meanwhile, would possibly benefit from the additional water developments that would serve as additional feeding areas. The white-faced ibis would possibly benefit from the fencing proposed for Wiregrass Reservoir. Other threatened, endangered, and sensitive wildlife species would not be appreciably affected by the proposed range developments.

The range developments outlined in Table 2-6 would have a short-term impact on big game. Since browse would certainly reinvade the treatment areas in 15-20 years, the cover reduction should be viewed as a short-term impact. No major mule deer winter range is proposed for spraying.

The Proposed Action would involve chaining and aerial seeding 1,945 acres (4 percent) of the deer winter range in the Curlew Allotment. This winter range is currently in a poor condition, primarily because of a lack of a browse understory beneath the juniper. The chaining would initially reduce the shrub component even more. An evaluation of 59 pinyon-juniper chaining projects revealed that sagebrush was the only shrub in sufficient abundance to produce significant amounts of deer winter forage 2-10 years following the chaining (Phillips 1977). The same study noted that seeded forbs and shrubs either failed to establish or were present in sparse stands. This poor establishment was attributed to heavy grazing, competition from seeded grass species and inadequate amounts of forb and shrub seed in the seed mixture. Assuming that these adverse conditions could be avoided, good shrub and forb stands would develop. In the long term the chaining and seeding would prove beneficial to mule deer.

The cover reduction associated with chaining is an important factor that could limit the use mule deer make of an area. McCullock (1973) has argued that cleared areas should be 100-600 feet in width. Wider openings, while currently utilized to some extent by deer, often prove undesirable as recreation use and other human activity increases in those areas. Since the proposed chaining would not be held to those suggested widths, it has to be assumed that mule deer use of the area would be limited until sufficient shrub growth provides adequate cover (15-20 years).

The proposed 200-acre chaining and aerial seeding in the Right Hand Grazing Allotment would affect nearly half of the winter range in the allotment. Mule deer currently utilizing the area would have no place to go while waiting for the shrubs to reestablish in 5-10 years. Although no adverse impacts over the long term would be expected (assuming that the shrubs reestablished), the short-term effect of the proposed chaining would be to reduce the winter carrying capacity by 50 percent or 15 deer. In light of existing heavy demand, the establishment of shrubs via seeding would be in doubt.

Impacts from water development are related to resultant changes in livestock distribution. The water projects proposed (see Table 2-6) would not adversely affect mule deer habitat. In fact, the fencing of spring heads, catchments and reservoirs would enhance those important albeit small areas for mule deer. The installation of two big game guzzlers on Hanzel Mountain would enable mule deer to utilize an additional 12,000 acres of summer range and would partially alleviate mule deer/cattle competition for water at existing water haul sites.

Approximately 5,100 acres of antelope habitat are scheduled for chaining and aerial seeding in the Curlew Allotment (16 percent of identified antelope habitat) under Alternative A. Antelope tend to avoid areas where sagebrush is higher than 30 inches (Yoakum 1978). It has been postulated that antelope thrive best on ranges in a sub-climax vegetative condition (Pronghorn Antelope Workshop 1978). Given certain restrictions on size and shape of the proposed project, it could markedly improve the antelope habitat; however, the lack of information with respect to important seasonal use areas prevents a meaningful analysis at this time.

The proposed water development would enhance spring/summer antelope habitat by allowing increased distribution of antelope into areas where water is currently limited.

The 1,240-acre brush control project in the Big Onion Allotment would not be beneficial to elk, since there is at present no danger of the brush species, primarily big sagebrush, crowding out the grass/forb vegetation to the point that elk forage requirements would not be met. A large acreage of private land within the allotment has been chemically sprayed on a regular basis in the past and would probably be treated again in coordination with BLM's treatment. Thus, the total acreage affected could be appreciably more than the 1,240 acres of public land.

Because of the social intolerance of elk to livestock, the water pipeline scheduled for the Big Onion would have an adverse impact on the elk. It would serve to draw livestock into portions of the allotment that were previously unavailable because of a lack of water.

The effect on upland game primarily centers on the sage grouse. Impacts from vegetation manipulation would depend on the percent kill of brush and the location and distribution of leave areas. Carrying capacity, degree of stress, and possible grouse displacement would be subsequently influenced. In the short term, proposed manipulations would adversely affect approximately 6 percent (5,890 acres) of crucial sage grouse nesting and brood-rearing habitat in the Curlew Allotment (see Table 4-19). In the area scheduled for spraying, the sagebrush generally exceeds 30 inches in height, so it is not to be regarded as high quality nesting cover in its current condition. Sage grouse habitat values would be restored and enhanced in 15-20 years as big sagebrush reoccupied the sprayed areas.

Table 4-19

Vegetation Manipulations and Crucial Sage Grouse Habitat in Curlew Allotment

	Acres of Crucial Nesting and Brood Rearing Habitat	% of Sage Grouse Habitat in Allotment
Chemical Spray	1,440	1.4
Chain and Seed	3,850	3.9
Burn and Seed	600	0.6

Many of the same impacts would be associated with the proposed chainings and drill seedings. The reinvasion of sagebrush would occur more rapidly because the percent kill would not be as high. The seeding of succulent forbs into the treated area would enhance the habitat.

Burning would enhance the edge effect and provide forage with higher nutrient content following the fire. Long-term habitat quality and carrying capacity would increase on the 600 acres proposed for burning if a patchy mosaic burn could be undertaken.

Water development would benefit sage and sharp-tailed grouse and mourning doves in the EIS area. The proposed pipeline developments would increase the distribution of sage grouse and mourning doves during the summer. The scheduled fencing of springs, reservoirs and catchments would provide an excellent source of non-competitive habitat. Fencing of King Creek would improve brood-rearing habitat for both sage and sharp-tailed grouse.

The proposed fencing of Wiregrass Reservoir would benefit waterfowl, largely by protecting and enhancing nesting and brood-rearing habitat.

The short-term effect of the proposed land treatments on non-game and furbearers would be varied. Existing sagebrush and juniper stands with little or no grass and forb understory would respond with greater vegetative diversity after treatment. In these 20,726 treated acres, non-game and furbearers dependent on dense stands of sagebrush or juniper would decrease, while those species dependent upon grassland or mixed grass/shrub stands would increase. Over the long term shrubs would reestablish, returning wildlife populations and diversity to pre-treatment levels.

Water developments would benefit non-game populations by improving the distribution of water. The fencing of springs, reservoirs, catchments and riparian habitat would also benefit non-game and furbearers.

Fencing on Stockton Creek (0.5 mile), King Creek (0.5 mile) and Moonlight Creek (0.25 mile) would greatly benefit aquatic wildlife habitat. It would allow riparian vegetation to increase, stream banks to stabilize, and spawning areas/pools to improve as a result of decreased sedimentation. Fish populations would be expected to increase by 30-50 percent. The effectiveness of fencing aquatic habitat has been documented (Van Velson 1977, Duff 1978).

Summary. Overall, Alternative A would benefit most wildlife species, but there would be some negative impacts as well. The pros and cons:

Wildlife/Habitat Group	Forage Allocation		Grazing Management		Range Development	
	Present	Alternative A	Present	Alternative A	Present	Alternative A
Threatened, Endangered and Sensitive	erratic prey base	stable prey base	erratic prey base	stable prey base	15 ferruginous hawk nests	14 ferruginous hawk nests
Big Game						
Deer	17,363 AUMs	21,357 AUMs, (-263 AUMs on Downey Front)	34% winter range conflict	33% winter range conflict + 1300 AUMs	maintain present numbers	+700 AUMs
Elk	552 AUMs, social intolerance-low	642 AUMs, social intolerance-high	insufficient rest of vegetation	increased rest of vegetation	social intolerance-low	social intolerance-moderate
Antelope	106 AUMs	166 AUMS	insufficient rest of vegetation	increased rest of vegetation	lack of adequate water, some conflict with fences	water development to enhance spring/summer habitat
Upland Game						
Sage Grouse	nesting & brood-rearing areas not seriously impacted	no change	too early season of use	no change	lack of adequate water	beneficial due to increased water distribution
Sharp-tailed Grouse	nesting habitat adversely affected	no change on those allotments with increases; nesting benefitted by livestock decreases	insufficient rest of vegetation in nesting areas	rest pastures would benefit nesting; some grazing too early	not a limiting factor	fencing to benefit brood-rearing habitat along King Creek
Non-game and Furbearers	declining habitat condition	stable habitat condition	unknown	beneficial	unknown	water developments and fencing beneficial
Waterfowl	poor nesting conditions	no change	nesting habitat degraded by early spring use	no change	poor production	50% production increase at Wiregrass Reservoir
Aquatic						
Excellent	- - -	- - -	not accessible by livestock	no change	1.8 mi.	2.4 mi.
Good	5.3 mi.	3.7 mi.	unknown	no change	unknown	no impact
Fair	5.7 mi.	4.4 mi.	riparian grazing too early and heavy	no change	unknown	no impact
Poor	3.1 mi.	5.4 mi.	riparian grazing too early and heavy	no change	unknown	no impact

V. VISUAL RESOURCES

According to BLM Manual 8400--Visual Resource Management (VRM)--an adverse visual impact is "any impact on the land or water form, vegetation, or any introduction of a structure which negatively changes or interrupts the visual character of the landscape and disrupts the harmony of the natural elements." As used in analyzing the alternatives in this chapter, this definition implies that any increase in vegetative allocation over the existing five-year active licensed use level would cause an adverse visual impact.

VEGETATIVE ALLOCATION. Under Alternative A (Proposed Action), initial allocation levels on 27 allotments would be above the five-year average licensed use. Initial utilization of forage at these higher allocations would result in adverse impacts on scenic quality in these areas (269,612 acres or 62 percent of all public land). Though vegetation condition is improving in much of this area, the impact of this additional grazing on scenic quality could lower the VRM class rating on up to 15 percent of the affected Class II and III acreage (12,000 acres or 3 percent of the total public land). Over the long term, 37 allotments would have increased AUM allocations (16 percent above present use). The impact of these additional increases, though, would be offset by gains accrued through the proposed land treatments and operation of the grazing systems. On the remaining allotments, where livestock grazing would remain at the same or decreased levels, improvement in scenic quality would occur. There would be a potential one-class increase for up to 21,000 acres of Class III and IV lands (15 percent of affected acreage or 5 percent of total public land).

GRAZING MANAGEMENT. Implementing new grazing systems and changing the seasons of use on some allotments would cause slight impacts on vegetation as the transition occurred. These would be short-term impacts; the long-term effect would be to enhance scenic quality by improving vegetation condition and variety.

RANGE DEVELOPMENT. Significant impacts would result from land treatments--chaining, chemical spraying and burning. The principal impact of the treatments would be caused by the overall size of the treated areas. This is of particular concern with two chaining projects in the Curlew Allotment, which are adjacent to Interstate Highway 80N. Though this area is all VRM Class IV, a corridor of high visibility occurs adjacent to the highway. Due to the high daily traffic volume (average daily traffic flow in 1976 was 2,920 vehicles), sensitivity to visual changes in this corridor is higher than in surrounding Class IV lands.

The proposed land treatments (see Map 2-2) would occur on 20,726 acres of public land (approximately 1,520 acres in VRM Class III, the remainder in VRM Class IV). Short-term impacts would jeopardize visual management objectives of all VRM classes (see Appendix F for a full description of those objectives). In the long term, however, the treatment areas would be acceptable because of improved vegetation, which would enhance visual quality by increasing variety and color. An exception would occur with the chaining and seeding projects on the Section 15 allotments--particularly where public land is in small (less than 320 acres), isolated parcels. These allotments are often surrounded by farm land where vegetation is already altered from the natural pattern. Chaining these parcels would detract from the visual quality by reducing vegetative contrast over the long term.

Visual quality constraints have been incorporated into the Proposed Action for all range developments. Most resulting impacts, therefore, would be within the visual management guidelines of all VRM classes except Class I. A total of 51.68 acres would be disturbed during the construction of these developments--0.5 acre in VRM Class I, 0.02 acre in VRM Class II, 1.41 acres in VRM Class III, and 49.75 acres in VRM Class IV (see Map 2-2). Short-term impacts would result from soil and vegetation disturbance, dust, equipment, etc., but would be reduced to acceptable levels over the long term. The proposed big game guzzlers in the Hanzel Mountain Allotment would be designed and located to minimize any impacts except those directly associated with construction.

A problem would result if fence construction were along ridges where "skylining" would occur. Any such fence skylined for more than 1/2 mile would be inconsistent with visual management objectives for Class IV. In cases where fences are on section lines, etc., this impact would be unavoidable.

Summary. Effects on visual quality can best be summarized by projected changes in VRM classes:

VRM	Present VRM Classes		Probable Improving (Class Change)			Probable Declining (Class Change)			Probable Continuation of Present Class		
CLASSES	Acreage	Percent of Public Land	Acreage	Percent of Class	Percent of Public Land	Acreage	Percent of Class	Percent of Public Land	Acreage	Percent of Class	Percent of Public Land
I	56,531	13	—	—	—	—	—	—	56,531	100	13
II	38,528	9	—	—	—	4,000	10	1	34,528	90	8
III	94,362	22	6,500	7	2	8,000	8	2	79,862	85	18
IV	242,087	56	14,500	6	3	—	—	—	227,587	94	53
TOTAL	431,508	100	21,000	—	5	12,000	—	3	398,508	—	92

The proposed range developments and treatments would cause temporary disruptions of the landscape in localized areas (Map 2-2), resulting in minor adverse impacts to the visual resources over the short term. This would be particularly evident with those land treatments which are adjacent to I-80N. Acreages disturbed (by VRM class) are :

Class I	Class II	Class III	Class IV	Total
less than 1	less than 1	1,520	19,256	20,778

In the long term, however, these areas would return to a more "natural" state, being visually acceptable with the exception of those isolated parcels where chaining and drill seeding occurred.

VI. WILDERNESS

VEGETATIVE ALLOCATION. As grazing increased to the proposed level of use, additional vegetation would be utilized as forage which was not used under the five-year average licensed use. According to interim management guidelines, changes in vegetative allocation to livestock resulting in increased livestock numbers or an extended period of use are permissible, so long as:

(1) the changes do not cause declining condition or trend of the vegetation or soil, and

(2) the changes do not cause unnecessary or undue degradation of the lands.

Of the five inventory units, Hanzel Mountain, Deep Creek Peak and South Deep Creek would have initial allocations above the five-year average, but vegetation condition and trend would be improving or static and potential soil erosion rates would be lower than at present. The remaining two inventory units--South Samaria and Petticoat Peak--would have initial allocation below the five-year average. Only on the Petticoat Peak unit does the potential for adverse effects result. Vegetation condition and trend would show some improvement, but projected soil erosion rates would be higher on both the Fish Creek and Lund portions of the unit. Allocations on these areas would increase, even though the unit would have a net allocation decrease because of the livestock forage reductions in the Bancroft Allotment.

RANGE DEVELOPMENT. Two big game guzzlers would be installed in the Hanzel Mountain unit. Installation of these guzzlers would cause minor localized disturbance (0.25 acre per guzzler) over the short term, but restraints incorporated into their design and location would greatly reduce any impacts on wilderness suitability over the long term.

Installation of cattleguards--two in the Hanzel Mountain Allotment, two in the Bancroft Allotment and one in the Samaria Allotment--on roads identified as unit boundaries or which penetrate into units would facilitate access to these areas. Though it is not possible to quantify the change in traffic volume that would occur, BLM personnel who have observed similar conversions from gates to cattleguards indicate that in many cases such conversions result in at least some increase in traffic volume.

Increased traffic volume, in turn, means increased recreational use by off-road vehicles (ORVs), campers and hunters. Such activities could create further impacts in the form of additional ORV trails, heavier use around primitive campsites, increased cutting of firewood and a general increase in noise levels. These impacts, either individually or cumulatively, could impair the wilderness characteristics of up to 12,000 acres, primarily in areas adjacent to these boundary roads.

It should be noted, however, that installation of these proposed developments is not scheduled until 1983 and 1984. By that time, only units identified as Wilderness Study Areas would remain in the review process. Thus, the question of impacts on wilderness suitability may be moot.

Summary. Vegetative allocations would have an adverse effect on only one of the five Wilderness Inventory Units. Increased allocations on the Fish Creek and Lund portions of the Petticoat Peak unit, though not adversely affecting vegetation trend or condition, would result in increased soil erosion potential.

The installation of five cattleguards would facilitate access to three of the five Wilderness Inventory Units. But since cattleguards are not permanent, any increase in recreational use resulting from their placement would be reversible.

VII. RECREATION

VEGETATIVE ALLOCATION AND GRAZING MANAGEMENT. The quality of hunting and fishing in the EIS area would show some long-term improvement over the existing situation, but Alternative A (Proposed Action) would not significantly alter present trends in habitat condition and population numbers for game species. Implementing new grazing systems, changing seasons of use on some allotments and undertaking new range developments and land treatments would in most cases have moderate beneficial effects on habitat condition in localized areas. There would be minor improvement in hunting and fishing quality.

Though a slight increase in mule deer populations is occurring presently, this important game species would not benefit significantly from implementation of this alternative. Habitat condition, particularly in critical winter range areas, would not be improved by the Proposed Action, which would result only in a maintenance of the present trend in population numbers, with projected hunter days remaining at the baseline figure of 10,150.

Upland game and waterfowl habitat would show improvement (due to fencing of Wiregrass Reservoir and some riparian areas in addition to changes in grazing management, etc.), resulting in increasing population numbers among these species. An additional 1,000 hunter days would be expected to result from this improvement, making a total of 7,000 hunter days for upland game projected for 1990.

Cutthroat and brown trout habitat, now seriously depleted in the EIS area, would show only limited improvement. Some limited habitat improvement for rainbow trout would also result. The change would be reflected in a slight increase in fisherman days (from 10,600 to 10,900 projected fisherman days on Hawkins and Wiregrass Reservoirs).

RANGE DEVELOPMENT. Alternative A (Proposed Action) includes the replacement of 17 gates with cattleguards. This would improve access to public lands in the areas where these cattleguards were installed. Though problems regarding legal access would remain unresolved, any action which would improve physical access to public lands would be beneficial to recreation. ORV use, hunting and sightseeing, as well as other recreation activities, would all benefit to some extent from improved access. The construction of 14 miles of new fence in three allotments--Curlew, Big Onion and Houtz Canyon--plus 3.75 miles of riparian fencing would adversely affect physical access, but only in localized areas. The overall effect of the Proposed Action on physical accessibility would be favorable, with no effect on legal access.

Summary. Hunting and fishing quality for most game species would show localized improvement over the short term with a continued increase over the long term, resulting in projected increases of 1,000 hunter days for upland game and 300 fisherman days (in relation to 1990 projections under the existing situation). Hunter days for mule deer would not change from the baseline figure of 10,150. Improved access in localized areas would result from the installation of 17 cattleguards, while the 17.75 miles of new fence would have a very limited adverse effect on access in other areas.

VIII. CULTURAL RESOURCES

As outlined in 36 CFR 800 ("Procedures for the Protection of Historic and Cultural Properties"), adverse impacts on cultural resources include the following: (1) destruction or alteration of all or part of the property, (2) isolation from or alteration of its surrounding environment, (3) introduction of visual, audible or atmospheric elements that are not in character with the property or alter its setting, (4) transfer or sale of federally owned property without adequate conditions or restrictions regarding preservation maintenance and use, and (5) neglect of a property resulting in its deterioration or destruction. Because of the non-renewable nature of archaeological and historic values, all adverse impacts to them are regarded as severe.

VEGETATIVE ALLOCATION. The continued presence of livestock on public lands could disturb recorded cultural resource sites or other sites not yet identified. Livestock grazing, in general, has negligible effects on archaeological sites except in areas where livestock concentrations occur, such as at corrals, water supply sources, mineral supplement stations and along fence lines. In an experiment testing the effects of trampling on artifacts around stock tanks under conditions similar to those here (Roney 1977), it was found that 48 percent of a group of artifacts had received damage from trampling. The damage included breakage (destruction) and displacement (destruction of the evidence of relationships between artifacts).

Under Alternative A (Proposed Action), AUMs would be allocated above the five-year average in 27 allotments initially, 37 allotments over the long term. Twenty-nine identified sites (62 percent of all recorded sites) in four allotments* would receive increased damage over both the short and long term. In addition, damage to any unknown cultural sites in the 37 allotments could occur. Trampling damage to sites in areas where numbers of livestock decrease (32 allotments) would be reduced, but not at a rate corresponding to the decrease, because cattle tend to congregate in the same areas where most cultural sites occur (around springs, along stream banks, etc.). Because cultural resources are non-renewable, any damage would constitute an irretrievable loss.

RANGE DEVELOPMENT. Negative impacts on cultural resources sometimes occur from the construction of various range developments and the implementation of land treatments. Excavation, ripping and clearing of land in connection with construction of range developments usually destroys any cultural resources affected. Spraying and burning of vegetation reduces ground cover and increases erosion potential, resulting in possible lateral displacement of cultural deposits. Chaining and drill seeding cause displacement and disruption of cultural deposits near the ground surface. Both the direct gouging of soil by the chain or rangeland drill and soil disturbance caused by uprooting plants can severely impair cultural values.

Mitigative surveying and monitoring built into the Proposed Action would prevent most of these impacts from occurring, though not all sites (subsurface in particular) would necessarily be identified through the Class III inventory (intensive field survey). If previously unidentified sites should be uncovered during construction, some destruction of the resource would occur before preventive action could be taken.

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*Curlew Allotment (24 sites), South Bull (1), Roy Arbon (3) and Shoestring (1).

In some instances where fencing of a project is required, cultural sites would benefit because of the removal of livestock from these exclosures. In particular, development of springs would involve fencing of an area around the spring in order to preserve riparian habitat, etc. Since cultural sites are often located near springs, this fencing would provide incidental advantages to cultural resources by nullifying the risk of livestock trampling.

Summary. The proposed adjustments in vegetative allocation would have beneficial effects on cultural resources by reducing allocations on 32 allotments (18 recorded sites occur on six of these allotments). But adverse effects (increased trampling damage) would occur on other allotments--27 initially, 37 in the long term--scheduled to receive increased livestock use. Twenty-nine known sites occur on four of these allotments. The Proposed Action incorporates mitigation (surveying and monitoring) which would prevent the majority of adverse impacts associated with range developments. Damage to unidentified sites, though, could result from excavation or clearing of land.

IX. ECONOMICS

Economic impacts occur in three general areas: the livestock industry, the construction industry and the recreation-related services industry. These direct impacts in turn cause additional or secondary impacts on their own as well as other industries. The magnitude of these secondary impacts can be estimated by the use of multipliers generated by the *Dynamic Regional Analysis Model (DYRAM)* for that particular industry. (See Appendix G for a discussion of the methodology used in economic analysis.)

Analysis of impacts to livestock operators is based on the ranch budget data summarized in Table 3-11. This data has been used to develop computer models that estimate the gains/losses in income the rancher would experience as a result of changes in grazing privileges. In cases where the alternative under consideration would reduce cattle AUM allocations, two management options of buying hay or reducing herd size are analyzed for each size group. These are the management alternatives identified by the ranchers as being feasible in this area. Secondary impacts are analyzed on the assumption that ranchers would opt for buying alfalfa; this represents a worst-case premise, since in most cases reducing herd size would cause less income loss. In instances where available AUMs would be greater than the ranchers' actual use over the period 1974-78, it is assumed that the extra AUMs would be used to reduce the need for alfalfa.

Implementation of the various alternatives would also bring about changes in expenditures for hunting and fishing (see the section on Recreation for hunter and fisherman day projections). To measure these changes as economic impacts, the projected changes in expenditures have been converted to income changes with the use of the relationship between total sales and income in the retail trade and services sector of the economy.

In order to compare the total income changes associated with each alternative, the various changes have been discounted to reflect what their *present value* would be with an assumed interest rate of 6.875 percent (established by the Water Resources Council for use by federal agencies in 1979).

Income. Alternative A would impose an overall 23 percent reduction in cattle AUMs from the current active preference and a 4 percent reduction from the five-year (1974-78) average licensed use. (Note that sheep are not considered here, because there would be no changes in sheep AUMs.) If hay were purchased to replace the 4 percent BLM reduction from actual use, the direct income loss to the ranchers would be $81,801. This would be 0.2 percent of the total 1977 farm income in the six-county study area. If ranchers reduced their herd sizes, the short-term annual losses would total $77,858. This income loss would not be uniformly spread between the various size groups or within each size group. Two groups, Groups 1 and 3, would experience gains in income, since this alternative establishes a level of grazing that is 2 percent above both groups' average actual use. Assuming that ranchers in these groups would use the extra BLM forage to feed their cattle and thereby reduce their needs for more expensive alfalfa, the average net gains/losses per operator would be as follows:

Size Group	Net Income Change/Operator
Group 1	+$4
Group 2	-$319
Group 3	+$24
Group 4	-$1,578

Economic impacts on individual ranchers in each size group could vary considerably. For example, even though size Group 1 shows a net gain in income, there are ten ranchers in this group whose average losses could be as much as $1,066. In Group 4 there are five ranchers who could lose up to $8,838 each. This would represent 78 percent of the total losses for this size group (see Table 4-20).

In the intermediate term (6-15 years after implementation) after the installation of the proposed range developments, only one group, Group 2, would continue to have fewer AUMs than the five-year average use, assuming that additional AUMs would be allocated to operators as they became available. The total annual income increase would be $19 per operator or a total of $4,682.

The long term (15-20 years after implementation) would show all four size groups with more AUMs than the average use for the years 1974-78. The total annual income gain would be $11,383. These income increases would occur as a result of the substitution of BLM forage for more expensive hay.

The secondary income changes resulting from direct changes in the livestock industry would cause a loss of $48,835 in the short term and gains of $2,795 and $7,063 in the intermediate and long terms respectively.

The total annual income changes in, or as a result of, the livestock industry would be -$130,636 in the short term, +$7,477 in the intermediate term and +$18,446 in the long term.

Alternative A would lead to a total of $564,035 being spent on new range developments. Of this, 26 percent or $146,650 would be the cost of labor and would be considered the direct income impact of these developments. This would be an additional $29,330 annually for five years. Based on the income

Table 4-20

Direct Income Changes in the Livestock Industry Under Alternative A

	Short Term				Intermediate	Long Term
	Total		Maximum		Hay	Hay
	Buy Hay	Reduce Herd	Buy Hay	Reduce Herd	Replacement	Replacement
Group 1						
% Lost from Active	-26%	-26%	-45%	-45%	-18%	-14%
% Lost from Average	+2%	+2%	-62%	-62%	+13%	+18%
$ Lost per Operator	+$4	+$4	-$1,066	-$939	+$22	+$31
No. of Operators	77	77	10	10	77	77
TOTAL $ CHANGE	+$308	+$308	-$10,660	-$9,390	+$1,694	+$2,387
Group 2						
% Lost from Active	-25%	-25%	-45%	-45%	-18%	-13%
% Lost from Average	-9%	-9%	-62%	-62%	-1%	+5%
$ Lost per Operator	-$319	-$566	-$2,203	-$3,806	-$15	+$14
No. of Operators	83	83	10	10	83	83
TOTAL $ CHANGE	-$26,477	-$46,978	-$22,030	-$38,060	-$1,245	+$1,162
Group 3						
% Lost from Active	-26%	-26%	-48%	-48%	-18%	-14%
% Lost from Average	+2%	+2%	-58%	-58%	+12%	+18%
$ Lost per Operator	+$24	+$24	-$6,203	-$3,610	+$57	+$82
No. of Operators	49	49	5	5	49	49
TOTAL $ CHANGE	+$1,176	+$1,176	-$31,015	-$18,050	+$2,793	+$4,018
Group 4						
% Lost from Active	-18%	-18%	-50%	-50%	-9%	-5%
% Lost from Average	-7%	-7%	-39%	-39%	+3%	+8%
$ Lost per Operator	-$1,578	-$899	-$8,838	-$5,015	+$40	+$106
No. of Operators	36	36	5	5	36	36
TOTAL $ CHANGE	-$56,808	-$32,364	-$44,190	-$25,075	+$1,440	+$3,816
TOTAL						
% Lost from Active	-23%	-23%	---	---	-14%	-10%
% Lost from Average	-4%	-4%	---	---	+6%	+11%
$ Lost per Operator	-$334	-$318	---	---	+$19	+$47
No. of Operators	245	245	---	---	245	245
TOTAL $ CHANGE	-$81,801	-$77,858	---	---	+$4,682	+$11,383

multiplier calculated by DYRAM for the construction industry, the secondary income impacts would be $18,997 annually. The direct and secondary income increase would be $48,307 annually during the five years of project installation.

Maintenance of the improvements would cost $30,785 annually from year six through the end of the project life. Approximately 80 percent or $24,629 of this would be the labor charge and could be considered the direct income impact of this maintenance. The secondary income impact (based on the construction multiplier calculated by DYRAM) would be $15,935 annually. The direct and secondary income increase would then be $40,564 annually from year six through the end of the project.

As a result of projected changes in hunting and fishing days (see Recreation section), recreation-related income would increase by $3,552 annually (direct and secondary) in the short term. In the intermediate term this annual increase would be $12,566 and in the long term $17,762. These would be increases above those expected under present management.

The total net present value for this alternative would be $99,479, with the following components:

Livestock	-$471,563
Construction	+$465,809
Services	+$105,233

Employment. In the short term Alternative A would cause a direct loss of six jobs. There would be a loss of seven jobs in the livestock industry and a gain of one job in construction. These direct losses would cause secondary losses of another three jobs (loss of four due to livestock changes and a gain of one in construction). In the intermediate term the losses in the livestock industry would be gained back, and an additional job would be gained due to increased AUMs. The total number of jobs gained due to recreation would be one. The total change in employment in the intermediate term would be an increase of four jobs. In the long term there would be one more job from increased AUMs, and the recreation-related jobs would be up to two. The net long-term increase in employment would be six jobs.

Capital Position. Since reductions in permits or permit values are measured against the total qualified demand, the impact of the loss of capital assets in the form of federal AUMs could be a larger impact than the direct loss of income due to reductions measured against the five-year average use. Neilson and Workman (1971) speak to the point:

> Grazing permits held today represent an asset which a rancher can borrow against or sell in the market. If this asset becomes nonsaleable, the rancher has lost the opportunity of marketing a valuable asset. . . .
>
> If the permit is reduced, the value of the permit is also reduced and the rancher has lost a capital asset which previously could have been sold, or at the least, been used as collateral for securing loans.

Impacts to capital position (either real or perceived) would occur only when ranches or permits are sold or used for collateral on loans. It should be noted, in any event, that the BLM does not officially recognize grazing privileges as having capital value or as being bought and sold in the marketplace.

Summary. Alternative A would lead to net short-term income losses of $78,777 annually as a result of changes in, or due to, the livestock industry (-$130,636), the construction industry (+$48,327) and recreation-related services (+$3,552). In the intermediate term the income gain would be $60,607 annually (livestock +$7,477; construction +$40,564; services +$12,566). The long-term income gain would be $76,772 annually (livestock +$18,446; construction +$40,564; services +$17,762). The total net present value of this alternative would be $99,479. The net long-term increase in employment would be six jobs.

X. SOCIAL CONDITIONS

This analysis projects social impacts expected from implementing the different alternatives. Social values and attitudes are assumed to be affected in the following ways:

> A person's attitudes are strongly influenced by material interests: Those things felt to be important, such as income and physical possessions, especially houses and land. Activities which are believed to threaten these interests are likely to be opposed.
>
> Organized groups provide their members with information and shared definitions which are influenced by and reinforce existing values and attitudes of the members.
>
> Attitudes which are not supported by a "personal stake" in material interest or by membership in organizations will be most easily influenced by mass media reporting.

Using this framework, it is expected that many people have strong and immediate personal reactions to BLM actions that affect their jobs, businesses or property values. Other individuals form their opinions on the basis of formal positions taken by groups and organizations to which they belong, such as grazing associations or the National Wildlife Federation. Finally, some people have very little opinion about agency actions, e.g., grazing practices, road closures or herbicide use, until such actions become controversial or affect them personally.

Economic Well Being. Persons most directly affected would be those who lose or gain income or employment. Alternative A would cause a short-term loss of nine jobs throughout the study area, some of which are likely to be part-time labor. This is offset by a long-term employment gain of six jobs as a result of range improvements. It is unlikely that any people would be forced to leave the study area because of these employment losses.

In terms of income, there would be an overall short-term loss of $78,777, which is offset by an overall long-term gain of $76,772. The short-term loss could cause some economic discomfort for those operators affected above the average; however, the magnitude of the individual loss would not be great enough to precipitate abandonment of ranching as a primary source of livelihood. Some operators might have to seek outside employment to supplement reduced ranch income during the short term in order to make ends meet.

Social Well Being/Quality of Life. Those individuals experiencing grazing reductions could have feelings of dissatisfaction and helplessness because they have been unable to change grazing allocation and management decisions. These feelings would cause a reduced sense of social well being. There would be no major impact to the ranching lifestyle.

There are some allotments that would, over the long term, experience increases in livestock grazing, which would not only replace short-term reductions, but provide greater capacity. In these cases the operator would have more confidence and positive feeling toward government activities.

Those involved in hunting and fishing would enjoy more available hunting and fishing days provided by this alternative, which would be perceived as an improvement to the quality of life in the area.

Summary. Alternative A would have negative short-term effects on both employment and income, which would be offset by long-term gains in 15 to 20 years. Recreationists would enjoy enhanced opportunities as a result of Alternative A. This could increase the underlying conflict between people with personal economic interests and those with environmental or recreation interests. Ranchers directly affected by loss of income would be likely to lose faith in public policies and governmental processes. However, those receiving increases would view the government with positive feelings. Generally, the overall social effects of Alternative A would be minor, but more severe than Alternative E (No Action).

ALTERNATIVE B

(INCREASED LIVESTOCK USE)

I. SOILS

Vegetative Allocation and Grazing Management. Implementation of this alternative would increase livestock grazing on almost half the allotments and increase potential erosion rates on 32 percent of the public land. Twenty-one allotments* or 21 percent of the EIS area would have significantly (over 20 percent) increased erosion. Nine of these allotments are presently rated with critical SSF values or increasing erosion trends. Among those allotments with a current estimated erosion potential of over 3.0 T/A/Yr (tons per acre per year), seven would be expected to have increased erosion rates as a result of increased grazing use. There would also be decreases in potential erosion rates on 30 allotments or 32 percent of the EIS area. See Table 4-1 for potential erosion rates for all allotments.

Increased stocking rates under this alternative would greatly increase use around areas where cattle already congregate, such as water troughs, streams, shady areas and valley flats. The more intensive use would increase the size of the already heavily used areas. This would decrease productivity and increase soil compaction over a greater area. Potential erosion rates in these enlarged areas would also increase due to decreased vegetative cover.

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*South Stone, South Bull, East Daniels, Moonlight Mine, Inkom, Lund, Swim, Myler, Garden Creek, Soloago, Preslar Ind., Johnson, T. Bloxham, Trayis, Roy Arbon, Rapid Creek, Shoestring, Hebdon, Taylor, L. Allen and Salveson.

Lack of vegetative cover would be a problem throughout the EIS area. In all, only three allotments--2 1/2 Mile, Moonlight Mine and Stanger--would be able to maintain the minimum 60 percent cover needed to supply adequate watershed protection against excessive runoff and soil erosion. These three allotments together account for less than 2 percent of the public land acreage in the EIS area.

RANGE DEVELOPMENT. All of the range developments proposed for Alternative A are also included under this alternative. Therefore, all the impacts discussed in the Soils section for Alternative A also apply here.

Some differences would occur due to the greater impact of livestock use. The area disturbed in placing water troughs would be 0.01 acres per unit, but the total area affected from the use of each trough would be 1.6 acres or 45 acres. The larger area impacted is due to the greater number of cattle congregating near water.

Summary. With implementation of this alternative, 32 percent of the public land would have increased potential erosion rates. Long-term adverse impacts would result from decreased plant and litter cover. Significant increases in potential erosion rates would occur on 21 allotments (21 percent of the public land). Potential erosion rates would decrease on 3 percent of the EIS area. Soil erosion would continue throughout the EIS area at an estimated 2.62 T/A/Yr, a 7 percent increase over the present level of erosion. Loss of fertile topsoil would be an irretrievable resource loss. Sufficient watershed protective covering would be found on only three allotments constituting less than 2 percent of the total acres. Increased use of allotments for livestock grazing would result in more intensive and extensive damage in areas already heavily utilized. Decreased soil productivity and increased soil compaction would be found over a widening area.

II. WATER RESOURCES

VEGETATIVE ALLOCATION AND GRAZING MANAGEMENT. Short-term adverse effects on watershed condition would be minor, but long-term impacts could be considerable. Protective vegetative cover, unchanged in the short-term, would be expected to show a long-term decline on 27 percent, and an increase on 28 percent, of the public acreage in the EIS area (see Table 4-9).

Although very few studies have measured runoff from small localized areas grazed at different intensities, Hanson, Kuhlman and Lewis (1978) found differences in mean annual and summer runoff, with the lower range condition producing more runoff. This suggests that localized improvements and declines in range condition (with 78 and 3 percent of the EIS area in good and poor condition respectively) would affect runoff-related problems. The changes in range condition are probably not large enough to cause any major change in regional water runoff and diminishing peak discharges. In the worst case, areas in declining condition would become more susceptible to excessive runoff, thus complicating existing sediment problems.

Under Alternative B about 67 percent of the area considered important to water resources would decline in overall watershed rating. This decline would affect seven allotments (see Table 4-3); the most serious impacts would affect

King Creek in the Toponce Allotment and Garden Creek and Mink Creek in the Soloago Allotment. Other waters would probably remain in their present condition. Utilization of the stream corridor would continue near present levels, and as a result no improvement in channel stability would be expected.

RANGE DEVELOPMENT. The only land treatment area likely to affect watershed condition is adjacent to Marsh Creek and involves about 1,040 acres scheduled for chaining and aerial seeding. The small area affected would not be likely to add significantly to the sediment loads of Marsh Creek.

No impacts on water quality would be expected. With respect to the spray treatments proposed near Deep Creek and Deadwood Creek, the application procedures and precautions proposed, as well as the relative fast absorption of the chemical (2,4-D) by soil, make it unlikely that the treatments would present any water quality problems.

Summary. Short-term adverse impacts to the watershed would be minor. Long-term impacts could be sufficiently severe to cause regionally significant impacts. Protective vegetative cover would decline on 27 percent and improve on 28 percent of the EIS area. Under the expected average conditions of Alternative B, 67 percent (seven allotments) of the acreage considered important to water resources would be adversely impacted, while the remainder would continue in its present condition or improve.

III. VEGETATION

VEGETATIVE ALLOCATION. The authorized stocking rate for livestock under this alternative is the current active grazing preference of each operator. (The active grazing preference includes authorized active use and non-use, but does not include suspended non-use.) A total of 82,462 AUMs would be allocated to livestock. This represents a 27 percent increase over the five-year (1974-78) average licensed use (see Table 2-7). This increased allocation would be met by implementing grazing systems, (the same as under Alternative A), undertaking land treatments as shown in Table 2-8, and shifting grazing use from allotments lacking forage to those with an excess of forage above the grazing preference.

Overall, vegetation in the EIS area would benefit slightly from this action in that no allotment would be stocked in excess of its production, except in riparian areas (discussed below).

GRAZING MANAGEMENT. Grazing systems, treatments and seasons of use (see Tables 2-5, 4-5 and 4-6) would be the same as those discussed under Alternative A (Proposed Action). Impacts would be similar, though slightly less favorable under this alternative. Range condition and trend would show long-term improvement (see Tables 4-7 and 4-8), but the rate of improvement would be slower on allotments that would receive additional grazing use to accommodate livestock shifted from forage-deficient allotments. (See Table 2-7 for an allotment-by-allotment presentation of forage supply in relationship to need.) Production would increase, largely as a result of land treatments, but overall vegetative cover would not be expected to change (see Table 4-9).

RANGE DEVELOPMENT. This alternative includes provisions for various structural developments and land treatments, the impacts of which have already been analyzed in connection with Alternative A. The differences here are that Alternative B (1) would not include big game water guzzlers, (2) would not include the fencing of 2.7 miles of riparian vegetation, and (3) would include an additional 3,570 acres of vegetation manipulation. Projected changes in vegetation types are shown in Table 4-21 and forage increases expected to accrue are shown in Table 4-22.

Table 4-21

Vegetation Type Changes by Land Treatments

	Sagebrush	Juniper	Mountain Shrub	Grass	Aspen	Maple	Douglas Fir	Greasewood
Present	230,258 ac.	79,678 ac.	11,158 ac.	28,828 ac.	28,468 ac.	4,941 ac.	34,413 ac.	3,420 ac.
Future	217,143 ac.*	76,033 ac.	11,158 ac.	45,588 ac.	28,468 ac.	4,941 ac.	34,413 ac.	3,420 ac.
Difference	-13,115 ac.	-3,645 ac.	0 ac.	+16,760 ac.	0 ac.	0 ac.	0 ac.	0 ac.

*The 7,536 acres of sagebrush spraying are not shown here.

Table 4-22

Vegetation Manipulation Impact Summary

Type of Manipulation	Acres	Composition (%)						Vegetative Ground Cover (%)		AUMs	
		Present			After Treatment			Present	After Treatment (15 years)	Present	After Treatment (15 years)
		Grass	Forb	Shrub	Grass	Forb	Shrub				
Aerial Spray Sagebrush	7,536	25	9	66	37	3	60	24	18	1,092	1,910
Chain and Aerial Seed (Sagebrush)	12,515	26	7	67	73	7	20	21	26	1,349	5,962
Chain and Aerial Seed (Juniper)	3,645	28	7	65	74	13	13	19	26	395	1,734
Burn Sagebrush and Drill Seed	600	27	6	67	73	10	17	21	21	68	286
Table Summary	24,296	26	8	66	62	7	31	22	23	2,904	9,892

Those increases would contribute to an overall long-term increase in vegetation production under this alternative (see Table 4-23). Productivity is projected to improve on 33 allotments by a total of 10,133 AUMs (6,988 AUMs from land treatments and 3,145 AUMs from implementation of grazing management systems). This represents a 6 percent increase over current production.

The structural developments included under Alternative B would have localized adverse impacts on vegetation (see Table 4-24), but most such

Table 4-24

Expected Acres Disturbed by Proposed Improvements

Range Improvements	Units	Total	Acres Disturbed per Unit		Total Acres Disturbed	
			Short term	Long term	Short term	Long term
Water Troughs	No.	16.00	0.01	0.01	0.16	0.16
Spring Developments	No.	8.00	0.35	0	2.80	0
Catchments	No	2.00	0.50	0.50	1.00	1.00
Reservoirs	No.	2.00	1.25	1.25	2.50	2.50
Pipelines	Miles	15.50	1.50	0	23.25	0
Fences	Miles	14.00	1.20	0	16.80	0
Cattleguards	No.	17.00	0.01	0.01	0.17	0.17
TOTAL					46.68 (100%)	3.83 (8%)

Table 4-23

Vegetation Production

	Present		Projected		
Allotment	Total Biomass (Pounds)	Useable Forage All Classes of Animals (AUMs)	Total Biomass (Pounds)	Useable Forage All Classes of Animals (AUMs)	Net Change (AUMs)
Houtz Canyon	2,537,936	1,160	2,570,754	1,175	+15
Table Mountain	904,384	130	904,384	130	0
Cedar Ridge	521,760	85	521,760	85	0
Side Canyon	104,352	15	104,352	15	0
Cold Water	132,179	19	132,179	19	0
Register Rock	69,568	10	69,568	10	0
Rock Creek	347,840	50	347,840	50	0
Curlew	122,943,942	45,382	139,516,738	51,965	+6,583
South Stone	8,442,807	4,683	9,762,866	5,221	+538
South Bull	4,066,393	1,066	4,199,905	1,276	+210
Pleasantview	56,306,150	33,182	56,662,494	33,617	+435
Samaria	22,497,004	9,607	22,864,990	9,749	+142
Walker	421,757	194	421,757	194	0
Madsen	----------------------------Included in Samaria Allotment----------------------------				
Hanzel Mountain	13,957,998	5,690	14,468,236	5,898	+208
Big Onion	4,050,000	2,413	4,196,022	2,655	+242
Cedar Mountain	1,413,989	440	1,413,989	440	0
Dairy Creek	3,081,564	1,645	3,169,609	1,692	+47
East Daniels	118,920	15	118,920	15	0
Deep Creek	159,551	20	159,551	20	0
East Fork	7,342,577	2,566	7,471,344	2,611	+45
Roy Arbon	50,182,657	22,474	51,194,168	22,927	+453
Indian Springs	7,246,210	3,223	7,412,582	3,297	+74
Black Rock	12,731,013	4,861	12,846,249	4,905	+44
Michaud Creek	4,120,753	1,802	4,196,216	1,835	+33
2 1/2 Mile	2,606,738	1,075	2,606,738	1,075	0
Moonlight Mine	2,953,420	971	2,953,420	971	0
Rapid Creek	3,863,071	1,431	3,925,161	1,454	+23
Inkom	6,559,315	2,567	6,597,643	2,582	+15
Stanger	574,909	249	574,909	249	0
Shoestring	3,054,001	1,338	3,083,673	1,351	+13
Bullock	95,097	38	95,097	38	0
Goodenough	50,370	15	50,370	15	0
McCammon	3,535,868	1,238	3,535,868	1,238	0
Price	357,062	88	357,062	88	0
Toponce	4,527,852	2,560	4,595,062	2,598	+38
Hebdon	927,574	364	927,574	364	0
Taylor	394,202	154	394,202	154	0
Bancroft	8,572,851	2,993	8,644,458	3,018	+25
Wistisen	236,325	106	236,325	106	0
Fish Creek	2,893,391	1,066	2,974,818	1,096	+30
Rowsell	24,000	4	24,000	4	0
Lund	4,247,088	1,417	4,337,005	1,447	+30
Crystal	4,500,027	2,158	4,643,911	2,227	+69
Swim	310,323	163	310,323	163	0
Tate Individual	68,560	24	68,560	24	0
Myler	115,200	48	115,200	48	0
Garden Creek	500,110	203	500,110	203	0
Stewart Individual	1,076,842	460	1,076,842	460	0
Soloago	3,274,501	1,204	3,372,409	1,240	+36
Rogers Individual	1,480,192	561	1,480,192	561	0
Hatley	133,600	54	133,600	54	0
Preslar Individual	46,320	10	46,320	10	0
Rocks	2,173,934	358	2,173,934	358	0
Johnson	985,098	377	985,098	377	0
Anderson	978,437	907	978,437	907	0
Howe	59,626	10	59,626	10	0
L. Allen	663,200	226	587,950	350	+124
B. Almond	29,036	13	29,036	13	0
T. Bloxham	38,800	5	70,790	37	+32
A. Brady	13,040	2	13,040	2	0
C. Criddle	9,600	2	9,600	2	0
Cambridge	1,003,798	520	1,003,798	520	0
N. Casperson	198,110	71	198,110	71	0
Criddle and Sons	464,928	173	464,928	173	0
R. Davis	160,770	36	266,380	168	+132
Egan	519,408	76	551,813	332	+256
Cottonwood	761,022	248	761,022	248	0
A. Evans	132,963	43	132,963	43	0
W. Fuhriman	16,650	2	29,010	15	+13
D. Hadley	19,550	9	19,550	9	0
Hatley Individual	96,560	35	96,560	35	0
G. Jensen	23,001	7	23,001	7	0
S. Kent	22,560	17	36,360	37	+20
Larson	58,212	19	58,212	19	0
McNee	101,500	25	115,540	74	+49
Marley	252,062	114	252,062	114	0
P. Morrison	63,618	25	93,118	60	+35
W. T. Evans	173,896	74	165,946	124	+50
Rt. Hand Graz. Assoc.	494,240	205	502,040	279	+74
Salveson	1,474,681	553	1,474,681	553	0
Servoss	178,500	132	178,500	132	0
Thompson	467,161	176	467,161	176	0
Tippits	54,684	18	54,684	18	0
L. Roberts	84,000	25	84,000	25	0
TOTAL	392,452,758	167,794	414,324,265	177,927	+10,133

impacts would be short term, and all would be minor when compared to the gains to be achieved through increased distribution of the grazing livestock.

Even though there are grazing systems and treatments proposed for this alternative, the riparian areas would continue to receive heavy grazing pressure since streams, reservoirs and springs are natural congregation areas for livestock. Since there would be no protective fencing and the range would be stocked to the grazing capacity of each allotment, all 146 riparian acres would be expected to remain in a degraded state.

Summary. This alternative would benefit vegetation in the EIS area by (1) adjusting stocking rates to the inventoried carrying capacity of the range land, (2) revising spring turnout dates so as to better satisfy the physiological needs of the forage plants, (3) implementing grazing systems designed to achieve a more even distribution of livestock use, and (4) undertaking land treatments that would maximize grass and forb production on 24,296 acres.

There would be minor adverse impacts resulting from installation of the proposed range developments, and livestock would continue to have an adverse impact on the already severely impacted riparian areas. Overall, however, this alternative would have a positive effect on the vegetation. Range condition, trend and productivity would all be expected to improve:

Range Condition

Status	Good	Fair	Poor
Present	108,307 ac. (26%)	228,547 ac. (54%)	84,310 ac. (20%)
Future	327,214 ac. (78%)	82,195 ac. (19%)	11,755 ac. (3%)

Range Trend

Status	Upward	Static	Declining
Present	159,577 ac. (38%)	251,063 ac. (60%)	10,524 ac. (2%)
Future	292,518 ac. (69%)	128,646 ac. (31%)	0 ac. (0%)

Vegetation Production

	Present	Future	Net Change
Total Biomass (lbs.)	392,452,758	414,324,265	+21,871,507
Useable Forage (AUMs)	167,794	177,927	+10,133

Cover

Present = 25% Future = 25%

IV. WILDLIFE

VEGETATIVE ALLOCATION. The present big game forage need is 18,021 AUMs. This amount of forage meets the 1978 population estimates jointly determined by BLM and Idaho Department of Fish and Game (IDFG); however, no forage has been reserved to meet future population increases as projected by IDFG. Habitat quality on 31 allotments comprising 31 percent of the EIS area would improve. Since the remaining 69 percent would be grazed at or above the five-year average (See Table 2-7), increased competition between wildlife and livestock would result.

Riparian areas would continue to be overused, and total wildlife production would remain below potential in riparian areas. Nearly all classes of wildlife would continue to be displaced from the riparian habitats, and general riparian habitat conditions would deteriorate at an accelerated pace.

Generally speaking, competition between livestock and wildlife for forage, cover, and space would remain high in the spring. Competition for forage prior to range readiness would be intense, and physical and social interactions between wildlife and livestock would remain.

Projected impacts on endangered, threatened, or sensitive wildlife species would be beneficial, since no allotments would be grazed above carrying capacity. While grazing would increase on 69 percent of the EIS area, the magnitude of change from the present situation would not be sufficient to adversely impact this group of species.

Big game habitat would not improve to any great extent. Future mule deer population increases are not provided for under this alternative. Competition for spring and winter forage with deer would intensify on the 69 percent of the EIS area scheduled to receive an increased livestock vegetative allocation.

That portion of the Curlew Allotment inhabited by antelope (Map 3-11) would be subject to a 48 percent increase in grazing above the five-year average. In light of the long-term decline in productivity of the seedings in Black Pine Valley, this increase in livestock use would pose a forage conflict to existing antelope populations in the next 10-15 years.

Elk would be adversely affected. The major conflict would be social intolerance (see analysis under Alternative A). Increased forage allocated to livestock means increased numbers of livestock, which would mean that elk would retreat to less accessible pastures. Although there would be no restoration of suspended non-use in the Inkom and Crystal Allotments under Alternative B, these allotments would nevertheless receive additional livestock use in the amount of 433 AUMs (94 percent increase) and 342 AUMs (39 percent increase) respectively. On the four other allotments where elk are found during the livestock grazing seasons, the percentage change in livestock use would be as follows: Big Onion Allotment (-2 percent), Soloago (+181 percent), Dairy Creek (+5 percent) and Johnson (+100 percent).

Vegetative allocation under Alternative B would result in adverse impacts on upland game. Ground nesting birds would be more susceptible to nest desertion and/or trampling by the increased number of cattle throughout the EIS area. Sage grouse habitat would continue to decline. The major conflict would center around a lack of succulent forbs in brood-rearing areas because of the rapid removal of forbs by livestock on spring and summer range.

A continued overall decline in aquatic wildlife habitat would result (see Table 4-25). The following allotments show substantial livestock vegetative allocation increases as measured against the existing situation: Crystal (39 percent), Soloago (181 percent), McCammon (128 percent), Shoestring (62 percent).

Essentially a continuation of the existing situation would be expected with respect to waterfowl habitat. Existing nesting conditions are poor at

Wiregrass Reservoir, and the P. Morrison Allotment, which encompasses Wiregrass, would receive a 50 percent increase in grazing use. This alternative would not enhance waterfowl habitat, since no shoreline or stream banks would be fenced. Non-game and furbearer habitat would be adversely affected by the increased grazing pressure that would occur on 69 percent of the EIS area.

Table 4-25

Changes in Fishery Stream Condition

Stream (Allotment)	Miles of Stream by Condition Class: Excellent Alt. B	Excellent Present	Good Alt. B	Good Present	Fair Alt. B	Fair Present	Poor Alt. B	Poor Present
Bell Marsh (Shoestring, Bullock)	.2	.2	-	-	.5	.5	-	-
Birch (Shoestring)	-	-	-	-	.3	.3	-	-
Crystal (Crystal)	-	-	-	-	.6	1.3	.7	-
Garden (Soloago, Preslar)	.5	.7	1.7	2.0	.5	.5	.5	-
Goodenough (Shoestring, Goodenough)	-	-	.3	.8	.5	-	.2	.2
King (Toponce)	-	-	.4	.6	.2	.1	.1	-
Harkness (McCammon)	-	-	-	-	-	-	1.1	1.1
Left Hand Fork Marsh (Larson)	-	-	-	-	-	-	.3	.3
Midnight (Crystal)	-	-	.5	1.3	1.1	1.1	.8	-
Moonlight (Moonlight Mine)	-	-	-	-	.7	1.1	.4	-
Mormon Canyon (Shoestring)	-	-	-	-	.3	.5	.2	-
Robber's Roost (None)	.4	.4	-	-	-	-	-	-
Stockton (Rt. Hand, Cottonwood)	.5	.5	-	-	-	-	1.5	1.5
Upper Rock (None)	-	-	.3	.3	-	-	-	-
Walker (Shoestring, None)	-	-	.3	.3	.3	.3	-	-
Total	1.6	1.8	3.5	5.3	5.0	5.7	5.8	3.1

GRAZING MANAGEMENT. Since the grazing systems under Alternative B are the same as those proposed under Alternative A, the impacts would generally be the same for both alternatives with respect to big game. One important difference should be noted. The use domestic livestock make on important mule deer winter shrubs would not be limited to 20 percent. The carrying capacity of mule deer winter range would decline on 68 percent of the mule deer winter range. The remaining 32 percent would either remain the same or improve slightly. IDFG population projections for big game would not be met in light of the increased livestock use. An unknown number of deer could die during periods of high snowfall because of a lack of adequate forage.

So far as grazing management is concerned, this alternative would affect upland game, furbearers, non-game, waterfowl and aquatic wildlife in the same manner and degree as specified under Alternative A.

RANGE DEVELOPMENT. Three types of vegetation manipulation are scheduled under Alternative B: chemical spraying (7,536 acres), chaining and aerial seeding (16,160 acres) and burning and drill seeding (600 acres). These treatments are all designed to increase grass and forb production on the 24,296 acres.

Chemical spraying would increase understory production and largely eliminate the tree/shrub overstory on all sprayed areas. Over a 15-20 year period, big sagebrush would reinvade the treated areas, and current cover and forage conditions would be reestablished.

Chaining would also increase the understory production and essentially eliminate the tree/shrub overstory in the treatment areas. The percent kill of big sagebrush would be less than that achieved via chemical spraying. The subsequent aerial seeding of the chained areas with perennial grasses, shrubs, and forbs would enhance the habitat for wildlife by increasing the variety of species available for forage and cover.

Burning would maximize the *edge effect*, improve understory production and maintain fingers and pockets of sagebrush cover. The area scheduled to be burned would be reoccupied by native vegetation, and wildlife species diversity would be enhanced. Some cover would be lost, but natural reseeding would allow big sagebrush to become reestablished. Drill seeding of perennial grass and forbs would also enhance the wildlife habitat values.

Water developments would improve habitat where water is lacking. Creation of fenced catchments, small reservoirs, and natural spring sources would provide excellent habitat and a non-competitive food source for a wide range of wildlife.

The projected effect of range developments on endangered, threatened, or sensitive wildlife varies because of the variety of developments and the wide range of wildlife species involved. Three ferruginous hawk nests, three of 15 nest sites identified in Black Pine Valley, are located in areas proposed for chaining and aerial seeding. Based on the results of a similar project undertaken in the early 1970s, the project would probably result in the long-term abandonment of the three nests. The spotted bat, meanwhile, would possibly benefit from the additional water developments that would conceivably serve as additional feeding areas. Other threatened, endangered and sensitive wildlife species would not be appreciably affected by the proposed range developments.

The range developments outlined in Table 2-8 would also have a variable impact on big game. No major mule deer winter range area is proposed for spraying. The effect of the spraying on mule deer summer range would be considered adverse because of the shape of the proposed treatment area rather than the change in vegetative composition. The proposed treatment does not leave sufficient natural cover areas to permit mule deer to effectively utilize the spray areas in the Pleasantview, South Bull, Big Onion and Curlew Allotments. The 350-acre spray project proposed for the Holbrook Summit area would reduce cover for mule deer on an important migration route to and from winter range on Samaria Mountain. Since browse would certainly reinvade the treatment areas in 15-20 years, the cover reduction should be viewed as a short-term impact in an ecological sense.

This alternative would involve chaining and aerial seeding 2,412 acres (5 percent) of the deer winter range in the Curlew Allotment. Impacts of this treatment would be essentially the same as those described under Alternative A. There would be additional treatments and impacts in the Samaria and South Stone Allotments. The 970-acre chaining in the South Stone would reduce current winter range by 19 percent. This reduction would have an adverse effect on wintering deer because of serious cover reduction. This is especially true in light of the annual feeding program undertaken by IDFG just north of the chaining area. The loss of cover would place the deer under additional stress and would result in the loss of an estimated 10-15 percent of the 725 mule deer that currently winter in the South Stone. The 200-acre chaining on Samaria Mountain would affect less than 2 percent of the identified winter range. The impacts on mule deer would not be measurable.

Approximately 5,800 acres of antelope habitat are scheduled for chaining and aerial seeding in the Curlew Allotment (18 percent of identified antelope habitat) under Alternative B. The impacts identified under Alternative A also apply here. The 700-acre project adjacent to I-80N would have an additional adverse impact on antelope. This is because the stringer of junipers that would be removed apparently has high value as a cover area for antelope. The animals are thought to use the edge of the juniper as a fawning and/or cover area. The removal of the juniper would have a serious impact on the remnant antelope herd, and a population reduction would be expected. The increased forage would not offset the cover loss.

The impacts on elk would be the same as those identified under Alternative A (Proposed Action).

The effect on upland game centers on the sage and sharp-tailed grouse. Those impacts associated with Alternative A also apply here. In addition, the 500-acre spray project scheduled for Wood Canyon in the Pleasantview Allotment would have a severe adverse impact on a major wintering population of sharp-tailed grouse. The birds depend on serviceberry fruits for winter food. The grouse migrate from the Curlew National Grassland into Wood Canyon. A loss of shrubs would seriously impair an important wintering area. Although no population estimates are available, it is likely that this spray project in Wood Canyon would markedly reduce winter populations of sharp-tailed grouse.

Waterfowl would not be affected by any of the scheduled range developments. The effect of land treatments on non-game and furbearers would be similar to that described under Alternative A. On the 24,296 treated acres or 6 percent of public land in the EIS area, non-game and furbearers dependent on dense stands of sagebrush or juniper would decrease while those species dependent upon grassland or mixed grass/shrub stands would increase.

Summary. Increased competition between wildlife and livestock for food, cover and space on 69 percent of the EIS area would result from Alternative B. Although there would be a few benefits to wildlife (largely due to the grazing systems), important fishery and riparian wildlife habitat would continue to be overgrazed, with wildlife production remaining well below its natural potential.

Wildlife/Habitat Group	Forage Allocation		Grazing Management		Range Development	
	Present	Alternative B	Present	Alternative B	Present	Alternative B
Threatened, Endangered and Sensitive	erratic prey base	less erratic prey base	erratic prey base	less erratic prey base	15 ferruginous hawk nests	12 ferruginous hawk nests
Big Game						
Deer	17,363 AUMs	17,100 AUMs,(-263 AUMs on Downey Front)	34% winter range conflict	33% winter range conflict	maintain present numbers	90-125 deer loss
Elk	552 AUMs, social intolerance-low	552 AUMs, social intolerance-high	insufficient rest of vegetation	increased rest of vegetation	social intolerance-low	social intolerance-moderate
Antelope	106 AUMs	106 AUMs (-52 AUMs for 1985 population)	insufficient rest of vegetation	increased rest of vegetation	60 animals, some conflict with fences	5-10 head decline due to loss of fawning habitat
Upland Game						
Sage Grouse	nesting & brood-rearing areas not seriously impacted	loss of forbs in brood-rearing areas	too early season of use	no change	lack of adequate water	beneficial due to increased water distribution
Sharp-tailed Grouse	nesting habitat adversely affected	no change	insufficient rest of vegetation	rest pastures to benefit nesting	not a limiting factor	loss of 500 critical acres of sharp-tailed winter habitat
Non-game and Furbearers	declining habitat condition	continued decline in habitat quality	unknown	beneficial	unknown	grassland species benefited, woodland species impaired
Waterfowl	poor nesting conditions	no change	nesting habitat degraded by early spring use	no change	unknown	no change
Aquatic						
Excellent	1.8 mi.	1.6 mi.	not accessible to livestock	no change	unknown	no impact
Good	5.3 mi.	3.5 mi.	unknown	no change	unknown	no impact
Fair	5.7 mi.	5.0 mi.	riparian grazing too early and heavy	no change	unknown	no impact
Poor	3.1 mi.	5.8 mi.	riparian grazing too early and heavy	no change	unknown	no impact

V. VISUAL RESOURCES

VEGETATIVE ALLOCATION. Under this alternative, an additional 17,480 AUMs above the five-year average licensed use would be authorized for livestock. The initial livestock allocation would be 72,329 AUMs, the inventoried range forage capacity. This would be an 11 percent increase over present use. Forty-three allotments (281,360 acres or 65 percent of the public land in the EIS area) would have initial allocations above the five-year average. Though vegetation condition is improving in much of this area, the impact of this additional grazing on scenic quality could lower the VRM class rating on up to 25 percent of the affected Class II and III acreage (20,000 acres or 5 percent of total public land). Over the long term, an additional 10,133 AUMs would be available for utilization, bringing livestock forage capacity to 82,462 AUMs. The impact of these increases, though, would be offset by gains projected to be achieved through the land treatments and grazing systems. On the remaining allotments, where grazing use would be at or below existing levels, improvement in scenic quality would occur, with a potential one-class increase on up to 15 percent of the affected Class III and IV acreage (17,000 acres or 4 percent of the total public land).

GRAZING MANAGEMENT. Implementing new grazing systems and changing the seasons of use on some allotments would cause slight impacts on vegetation as the transition occurred. These would be short-term impacts; the long-term effect would be to enhance scenic quality by improving vegetation condition and variety.

RANGE DEVELOPMENT. Impacts resulting from range developments and land treatments under this alternative would be basically the same as those under Alternative A (Proposed Action). Developments included in Alternative A specifically to benefit wildlife--3.75 miles of riparian fencing and two big game guzzlers--would not be constructed under this alternative. Additional areas of land treatments (3,570 acres), though, would be initiated in order to produce an additional 1,063 AUMs of forage (see Map 2-2). This additional acreage includes 200 acres of VRM Class I, 430 acres of Class III and 2,940 acres of Class IV. The 200-acre chaining and aerial seeding in the Samaria Allotment would not meet management objectives for Class I areas over either the short or long term.

Several of these additional treatment areas would adversely affect visual quality over the short term due to their visibility from major highways (I-80N, US-91). Though these areas are all in Class III or IV, a corridor of high visibility occurs adjacent to these highways, making the areas more sensitive to visual changes. Over the long term, these treatment areas would be acceptable because of improved vegetation, enhancing visual quality by increasing variety and color. An exception to this would occur with the chaining and seeding projects on the W. T. Evans and L. Allen Allotments. These are small Section 15 allotments surrounded primarily by farm land where vegetation is already altered. Chaining these parcels would detract from the visual quality by reducing vegetative contrast over the long term.

Summary. Effects on visual quality can best be summarized by projected changes in VRM classes:

VRM	Present VRM Classes		Probable Improving (Class Change)			Probable Declining (Class Change)			Probable Continuation of Present Class		
CLASSES	Acreage	Percent of Public Land	Acreage	Percent of Class	Percent of Public Land	Acreage	Percent of Class	Percent of Public Land	Acreage	Percent of Class	Percent of Public Land
I	56,531	13	---	---	---	---	---	---	56,531	100	13
II	38,528	9	---	---	---	6,500	17	2	32,028	83	7
III	94,362	22	5,500	6	1	13,500	14	3	75,362	80	18
IV	242,087	56	11,500	5	3	---	---	---	230,587	95	53
TOTAL	431,508	100	17,000	---	4	20,000	---	5	393,508	---	91

The proposed range developments and treatments would cause temporary disruption of the landscape in localized areas (Map 2-2), resulting in minor adverse impacts to the visual resource over the short term. This would be particularly evident with those land treatments which are adjacent to I-80N and US-91. Acreages disturbed by VRM class are:

Class I	Class II	Class III	Class IV	Total
200	less than 1	1,950	22,193	24,343

In the long term, however, these areas would return to a more "natural" state, being visually acceptable with the exception of the small, isolated W. T. Evans and L. Allen Allotments and the parcel in VRM Class I (Samaria Allotment) where chaining and drill seeding would occur.

VI. WILDERNESS

VEGETATIVE ALLOCATION. Under this alternative, three of the five Wilderness Inventory Units would be adversely affected by increased vegetative allocations. Increased allocations on the Deep Creek Peak and South Deep Creek units, in addition to the Fish Creek and Lund portions of the Petticoat Peak unit, would result in projected increases in soil erosion rates. Vegetation condition and trend would not be adversely affected on these units. Vegetative allocations would not affect the two remaining units--Hanzel Mountain or South Samaria.

RANGE DEVELOPMENT. Impacts caused by range developments--cattleguards in particular--are discussed in the analysis under Alternative A (Proposed Action). An additional impact would result from a 200-acre chaining and aerial seeding in the South Samaria unit. Though suitability of the unit as a whole would not be impaired, a small portion of the unit would be adversely affected. The area could be chained under present interim management guidelines, but a detailed environmental assessment would have to be completed and approved prior to implementation.

Summary. Increased vegetative use would adversely affect three of the five Wilderness Inventory Units--Deep Creek Peak, South Deep Creek and Petticoat Peak--because projected soil erosion rates would increase. Vegetation trend and condition would not be adversely affected on any of the units.

A 200-acre chaining and aerial seeding project in the South Samaria unit would impair the wilderness suitability on a portion of that unit. In addition, installation of five cattleguards would facilitate access into three of the five Wilderness Inventory Units. But since a cattleguard is not a permanent improvement, any increase in recreational use resulting from placement of the cattleguards would be reversible.

VII. RECREATION

VEGETATIVE ALLOCATION AND GRAZING MANAGEMENT. Under this alternative, a continued decline in habitat for most game species in the EIS area would occur, with accelerated deterioration in some areas. Though changes in season of use and grazing systems would provide some benefits to certain game species, the overall effect of this alternative would be a reduction in hunting quality. Projected mule deer hunter days would be 8,000 (loss of 2,150 days); upland game projections would be 5,000 hunter days (loss of 1,000 days). Rainbow trout habitat at Hawkins and Wiregrass Reservoirs would not change, though deterioration in stream fishery habitat would occur. No change in the 10,600 fisherman day projection for the two reservoirs would be expected under this alternative.

RANGE DEVELOPMENT. Impacts from range developments would be the same as under Alternative A (Proposed Action) with the exception of the 3.75 miles of riparian fencing, which would not be constructed under this alternative.

Summary. Hunting quality for most game species would decline over both the short and long term, resulting in projected decreases of up to 2,150 mule deer hunting days and 1,000 upland game hunting days. Fishing quality would also decrease, though no change in fisherman days would occur in those areas where use figures are available. Improved physical access in localized areas would result from the installation of 17 cattleguards, while the 14 miles of new fence would have a very limited adverse effect on physical access in other areas.

VIII. CULTURAL RESOURCES

VEGETATIVE ALLOCATION. Under this alternative, livestock AUMs would be allocated above the five-year average in 43 allotments initially, 52 allotments over the long term. Thirty identified sites (64 percent of all recorded sites) in five allotments* would be expected to receive increased damage over the short term. One additional site--in the Dairy Creek Allotment--would be adversely affected over the long term. In addition, damage to any unknown cultural sites in these allotments could occur. Trampling damage to sites in areas where numbers of livestock decrease would be reduced (31 allotments, four of which contain 16 recorded sites), but not at a rate corresponding to the decrease because cattle tend to congregate in the same areas where most cultural sites occur (around springs, along stream banks, etc.). Because cultural resources are non-renewable, any damage would constitute an irretrievable loss.

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*Curlew Allotment (24 sites), Roy Arbon (3), Shoestring (1), South Bull (1) and Cedar Mountain (1).

RANGE DEVELOPMENT. Impacts to cultural resources would be the same as those under Alternative A (Proposed Action). The same mitigative surveying and monitoring incorporated in Alternative A would be utilized under Alternative B (Increased Livestock Use), thus preventing most negative impacts resulting from the construction of range developments.

With the additional land treatments (3,570 acres) under this alternative, the potential for damage to cultural sites would increase. Additional areas of greater erosion potential and soil disturbance could result in displacement and disruption of additional cultural deposits, thus further impairing cultural values.

No additional projects involving the construction of exclosure areas would be implemented under this alternative, thus no additional incidental advantages to cultural resources would result.

Summary. The proposed adjustments in vegetative allocation would have beneficial effects on cultural resources by reducing allocations on 30 allotments (16 recorded sites occur on four of these allotments). But adverse effects (increased trampling damage) would occur on other allotments--43 initially, 52 in the long term--scheduled to receive increased livestock use. Thirty known sites on five allotments would be adversely affected initially, with one additional site being affected over the long term.

IX. ECONOMICS

Income. Assuming the livestock operators used all AUMs available to them, this alternative would have a direct beneficial impact on rancher income. An initial 7 percent increase in cattle AUMs would enable operators to substitute less expensive BLM forage for hay and grain feeds. Savings would amount to between $17 (Group 1) and $190 (Group 4) per operator. The total short-term direct gain would be $15,170. In the intermediate term the total gain would be $41,538 annually. In the long term the total annual gain would be $52,450. For the short and intermediate terms it is not possible to determine the maximum gains. In the long term the maximized gains would range from $711 for Group 1 ranchers to $1,150 for Group 2 ranchers (see Table 4-26).

The secondary annual income changes would be $9,057 in the short term, $24,798 in the intermediate term and $31,313 in the long term.

The total annual income changes in, or as a result of, the livestock industry would then be +$24,227 in the short term, +$66,336 in the intermediate term and +$83,763 in the long term.

Alternative B would lead to a total of $595,960 being spent on new range developments. Of this, 26 percent or $154,950 would be the cost of labor and would be considered the direct income impact of the developments. This would amount to an additional $30,990 annually over five years. Based on the income multiplier calculated by DYRAM for the construction industry, the secondary income increase would be $20,051 annually. The direct and secondary income increase would be $51,041 annually during the five years of project installation.

Maintenance of the improvements would cost $34,277 annually from year six through the end of the project life. Approximately 80 percent or $27,422 of this would be the labor charge and would be considered the direct income impact of this maintenance. The secondary income impact (based on the construction multiplier calculated by DYRAM) would be $17,742 annually. The direct and secondary income increase would then be $45,164 annually from year six through year 20.

Table 4-26
Direct Income Changes
Livestock Industry

Size Group	Time Frame	Minimum	Maximum	Average	Number of Operators	Total Change
1	Short	0	---	$ 17	77	$ 1,309
	Inter.	0	---	$ 50	77	$ 3,850
	Long	0	$ 711	$ 63	77	$ 4,851
2	Short	0	---	$ 35	83	$ 2,905
	Inter.	0	---	$ 97	83	$ 8,051
	Long	0	$1,150	$122	83	$10,126
3	Short	0	---	$ 84	49	$ 4,116
	Inter.	0	---	$225	49	$11,025
	Long	0	$ 942	$285	49	$13,965
4	Short	0	---	$190	36	$ 6,840
	Inter.	0	---	$517	36	$18,612
	Long	0	$1,025	$653	36	$23,508

This alternative would lead to decreased income in the recreation-related services industry as a result of deteriorating habitat and the resultant loss of hunting days (see Recreation section). Measured against the levels expected under existing management, the annual losses would be $1,966 on the short term, $46,562 in the intermediate term, and $72,450 in the long term. These sums represent both the direct and secondary losses.

The total net present value of this alternative would be $716,276 and would be made up of the following components:

Livestock	+$562,871
Construction	+$507,342
Services	-$353,937

Employment. Employment changes would be a gain of three jobs in the short term as a result of changes in, or due to, the livestock industry (+1) and the construction industry (+2). The gain in the construction industry would remain constant throughout the life of the alternative. In the intermediate term two additional jobs would be gained in the livestock industry and three jobs would be lost in the recreation-related services industry for a net gain of two jobs. In the long term the services industry would lose an additional two jobs and the livestock industry would gain one, bringing the net employment gain to one job.

Capital Position. Under the initial vegetative allocation, this alternative would have impacts to capital position similar to, but less severe than, those discussed in Alternative A. In the long term all active qualifications would be regained, and any impact to capital position would be negated.

Summary. Alternative B would lead to short-term income gains of $73,302 annually as a result of changes in, or due to, the livestock industry (+$24,227), the construction industry (+$51,041) and the recreation-related services industry (-$1,966). In the intermediate term the income gain would be $64,938 annually (livestock +$66,336; construction +$45,164; services -$46,562). In the long term income gains would amount to $56,477 (livestock +$83,763; construction +45,164; services -$72,450). The total net present value of this alternative would be +$716,276. The net long-term employment gain would be one job.

X. SOCIAL CONDITIONS

Economic Well Being. This alternative would have beneficial social impacts by providing a short-term increase in employment of three jobs and an additional job over the long term. There would be a short-term increase in income of $73,302, with a long-term increase of $56,477.

Social Well Being/Quality of Life. But some adverse impacts would also be expected. Since certain allotments lack the productive capacity to satisfy the full grazing preference under Alternative B, some shifting of use would be necessary. These shifts could require moving livestock greater distances from allotment to allotment, which would be more costly in terms of time, expense and energy consumption. In addition to these costs, some operators could lose the use of allotments in which they had invested both time and money for improvements. An additional impact would be the necessity to break up informal partnerships whereby common allotment holders shared work at certain times of the year for common benefit. Severance of these relationships would cause the affected operators to feel frustration and, despite the increased vegetative allocations, dissatisfaction with the government. There would be no major impact on the ranching lifestyle as a result of this alternative.

With a reduction of hunting and fishing days, the wildlife and sportsman groups would need to supplement their activities outside the study area. This reduction might be perceived by some as a reduction in the quality of their lifestyle.

Summary. This alternative would provide improved returns in terms of income and employment. But individuals enjoying hunting and fishing would be forced to travel farther for these activities, and some livestock operators would be forced to change allotments. Generally, the overall social impacts of Alternative B would be more beneficial than than those projected under Alternatives C and D, but more severe than those under Alternatives A and E.

ALTERNATIVE C

(NO LIVESTOCK GRAZING)

I. SOILS

Vegetative Allocation And Grazing Management. Elimination of livestock grazing would allow soil and vegetation to recover from the effects of cattle trampling and heavy grazing. Potential erosion rates would decrease on 84 allotments (98 percent of the public land) as a result of increased plant and litter cover. Of these 84 allotments, 39 would show significant decreases (over 20 percent). See Table 4-1 for potential erosion rates for all allotments.

On the Anderson and Moonlight Mine Allotments and on the Etcheverry and Trayis unallotted parcels, there would be no changes in erosion. All allotments currently having either critical SSF values or increasing erosion trends (see Map 3-3) would increase in vegetative cover, which would help these areas to recover or stabilize.

With the elimination of grazing, soils in areas of heavy livestock use would recover from compaction, though such recovery could take 10 years or longer (Gifford and Hawkins 1978). Areas that have been the most intensively used would show the greatest amount of response over the long term. Soil productivity would increase in areas that have been intensively utilized as the soils recovered from compaction and plant growth and vigor increased.

Summary. Implementation of the "No Grazing" alternative would result in long-term beneficial impacts. The soils and vegetation would recover from the effects of trampling and grazing by livestock. An estimated 98 percent of the area would decrease in erosion, of which 45 percent would be significant. The entire EIS area would have an estimated erosion rate of 1.81 T/A/Yr, or a 26 percent improvement from the present condition. In areas that have had intensive livestock use (valley flats, streams, etc.), soil compaction would probably decrease over time and soil productivity would probably increase.

II. WATER RESOURCES

Vegetative Allocation. Protective vegetative cover would be likely to increase on 99 percent of the public acreage in the EIS area, and 54 percent of the public land would show an improvement to a good range condition. With livestock removed, infiltration would maximize, increasing by 30 percent or more. This large improvement in watershed condition could reduce regional flood hazards and sediment problems by as much as 10 percent and would improve all localized problems currently being caused by livestock use. Numerous studies have shown that ungrazed areas have decreased runoff and reductions in water quality problems. All allotments important to water resources--except for Toponce, Moonlight Mine, and Larson--would show significant reductions in sediment yield and erosion (see Table 4-3). These reductions might not improve the total downstream sediment problems, but would likely improve localized conditions considerably.

There would also be improvement in water quality. Stream banks currently in unstable condition would gradually stabilize as vegetation reestablished. Sediment problems associated with livestock damaged streambanks would be reduced as a result of the stabilization. Water quality problems resulting from livestock use would diminish, though this would not significantly change the overall regional problems because of the small areas involved.

Summary. Cessation of livestock grazing on public land would have favorable impacts on water resources. Protective vegetative cover would increase on 99 percent of the total public acreage in the EIS area, and range condition would improve to good on 54 percent of the area, which would lead to an increase in infiltration rates and decreases in runoff and sediment yield. All but three of the allotments considered important to water resources would show significant reductions in sediment yield and erosion.

III. VEGETATION

VEGETATIVE ALLOCATION. Impacts to vegetation, under the "No Grazing" alternative, would be uniformly favorable. Plant composition within each vegetation type on public land would gradually move toward the climax (natural potential) plant community for the Bannock-Oneida area.

All public range land in the area would show a long-term improvement by one condition class with the exception of those acreages already rated in good condition. As shown in Table 4-27, this improvement would mean that the total amount of acreage qualifying as good condition would increase from the current 26 percent to 80 percent by 1995. There would be no public land rated in poor condition.

Similar improvements in trend, productivity and cover would be expected (see Tables 4-28, 4-29 and 4-9). The projected changes in range trend would mean a 95 percent increase in the amount of acreage in an upward trend and a reduction to zero in acreage showing a declining trend. Vegetative production is projected to increase by 26,673,684 pounds if measured as total biomass or 11,484 AUMs if measured as useable forage. This would be a 7 percent increase in productivity. Overall average vegetative cover would be expected to increase from 25 percent to 30 percent by 1995.

The beneficial impact on riparian areas would be especially pronounced. As noted in Chapter 3, these areas have been heavily affected by livestock use. Removal of livestock from the public land would enable vegetation in riparian zones to improve in vigor and volume.

Table 4-27

Range Condition

Acreage

Allotment	Good		Fair		Poor	
	Present	Future	Present	Future	Present	Future
Houtz Canyon	722	2,350	1,628	617	617	0
Table Mtn.	0	925	925	115	115	0
Cedar Ridge	0	550	550	50	50	0
Side Canyon	0	120	120	0	0	0
Cold Water	0	152	152	0	0	0
Register Rock	0	80	80	0	0	0
Rock Creek	0	400	400	0	0	0
Curlew	15,484	101,091	85,607	37,982	37,982	0
South Stone	5,108	10,260	5,152	1,702	1,702	0
South Bull	0	4,938	4,938	0	0	0
Pleasantview	0	41,210	41,210	17,816	17,816	0
Samaria	1,664	17,015	15,351	8,268	8,268	0
Walker	0	486	486	66	66	0
Madsen	- - - - Small area figured in with Samaria - - - -					
Hanzel Mtn.	2,744	7,574	4,830	4,739	4,739	0
Big Onion	45	6,684	6,639	366	366	0
Cedar Mtn.	2,001	2,001	0	0	0	0
Dairy Creek	0	2,202	2,202	1,118	1,118	0
East Daniels	0	120	120	0	0	0
Deep Creek	0	161	161	0	0	0
East Fork	1,003	4,849	3,846	2,511	2,511	0
Roy Arbon	19,603	41,758	22,155	4,298	4,298	0
Indian Springs	1,618	9,491	7,873	916	916	0
Black Rock	9,059	11,141	2,082	0	0	0
Michaud Cr.	2,049	4,215	2,166	0	0	0
2 1/2 Mile	2,477	2,477	0	141	141	0
Moonlight Mine	2,223	2,223	0	0	0	0
Rapid Creek	3,051	3,051	0	0	0	0
Inkom	3,223	5,511	2,288	0	0	0
Stanger	548	548	0	0	0	0
Shoestring	1,581	2,281	700	0	0	0
Bullock	0	195	195	0	0	0
Goodenough	0	23	23	0	0	0
McCammon	1,164	3,248	2,084	0	0	0
Price	265	265	0	0	0	0
Toponce	3,837	4,291	454	0	0	0
Hebdon	791	791	0	0	0	0
Taylor	135	411	276	0	0	0
Bancroft	9,336	11,000	1,664	0	0	0
Wistisen	0	215	215	0	0	0
Fish Creek	2,042	2,280	238	270	270	0
Rowsell	0	40	40	0	0	0
Lund	5,208	5,569	361	0	0	0
Crystal	3,437	4,827	1,390	413	413	0
Swim	0	281	281	0	0	0
Tate Ind.	80	80	0	0	0	0
Myler	120	120	0	0	0	0
Garden Creek	40	317	277	40	40	0
Stewart Ind.	201	988	787	0	0	0
Soloago	3,061	3,438	377	0	0	0
Rogers Ind.	812	812	0	0	0	0
Hatley	229	229	0	0	0	0
Preslar Ind.	0	40	40	0	0	0
Rocks	0	499	499	0	0	0
Johnson	1,114	1,114	0	0	0	0
Anderson	0	2,012	2,012	348	348	0
Howe	0	80	80	0	0	0
L. Allen	0	509	509	11	11	0
B. Almond	0	0	0	53	53	0
T. Bloxham	0	0	0	80	80	0
A. Brady	0	0	0	40	40	0
C. Criddle	0	0	0	40	40	0
Cambridge	0	1,347	1,347	160	160	0
N. Casperson	0	440	440	0	0	0
Criddle and Sons	0	564	564	0	0	0
R. Davis	0	0	0	340	340	0
Egan	0	0	0	635	635	0
Cottonwood	0	480	480	440	440	0
A. Evans	0	200	200	0	0	0
W. Fuhriman	0	0	0	40	40	0
D. Hadley	0	0	0	80	80	0
Hatley Ind.	114	114	0	0	0	0
G. Jensen	0	33	33	0	0	0
S. Kent	0	0	0	95	95	0
Larson	40	40	0	0	0	0
McNee	0	120	120	40	40	0
Marley	254	254	0	0	0	0
P. Morrison	0	0	0	120	120	0
W. T. Evans	240	240	0	0	0	0
Right Hand Grazing	0	360	360	240	240	0
Salveson	1,519	1,519	0	0	0	0
Servoss Bros.	0	80	80	120	120	0
Thompson	0	1,340	1,340	0	0	0
Tippits	65	65	0	0	0	0
L. Roberts	0	120	120	0	0	0
TOTAL	108,307 (26%)	336,854 (80%)	228,547 (54%)	84,310 (20%)	84,310 (20%)	0 (0%)

Table 4-28

Range Trend

Acreage

	Upward		Static		Declining	
Allotment	Present	Future	Present	Future	Present	Future
Houtz Canyon	0	2,245	2,967	722	0	0
Table Mtn.	0	1,040	1,040	0	0	0
Cedar Ridge	0	600	600	0	0	0
Side Canyon	0	120	120	0	0	0
Cold Water	0	152	152	0	0	0
Register Rock	0	80	0	0	80	0
Rock Creek	0	400	400	0	0	0
Curlew	20,050	123,589	111,392	15,484	7,631	0
South Stone	3,258	6,854	8,704	5,108	0	0
South Bull	0	4,938	4,938	0	0	0
Pleasantview	34,467	59,026	23,166	0	1,393	0
Samaria	20,723	23,619	4,560	1,664	0	0
Walker	0	552	552	0	0	0
Madsen		- - - - Figured in with Samaria - - - -				
Hanzel Mtn.	8,699	9,569	3,614	2,744	0	0
Big Onion	7,050	7,005	0	45	0	0
Cedar Mtn.	0	0	2,001	2,001	0	0
Dairy Creek	3,320	3,320	0	0	0	0
East Daniels	0	120	120	0	0	0
Deep Creek	0	161	161	0	0	0
East Fork	0	6,357	7,360	1,003	0	0
Roy Arbon	26,977	26,453	19,079	19,603	0	0
Indian Springs	424	8,789	9,983	1,618	0	0
Black Rock	0	2,082	11,141	9,059	0	0
Michaud Cr.	3,134	2,166	1,081	2,049	0	0
2 1/2 Mile	1,056	141	1,562	2,477	0	0
Moonlight Mine	1,590	0	633	2,223	0	0
Rapid Creek	0	0	3,051	3,051	0	0
Inkom	5,511	2,288	0	3,223	0	0
Stanger	548	0	0	548	0	0
Shoestring	2,281	700	0	1,581	0	0
Bullock	0	195	195	0	0	0
Goodenough	0	23	23	0	0	0
McCammon	3,248	2,084	0	1,164	0	0
Price	265	0	0	265	0	0
Toponce	4,163	454	128	3,837	0	0
Hebdon	791	0	0	791	0	0
Taylor	411	276	0	135	0	0
Bancroft	0	1,664	11,000	9,336	0	0
Wistisen	0	215	215	0	0	0
Fish Creek	0	508	2,550	2,042	0	0
Rowsell	0	40	40	0	0	0
Lund	0	361	5,569	5,208	0	0
Crystal	0	1,803	5,240	3,437	0	0
Swim	0	281	281	0	0	0
Tate Ind.	0	0	80	80	0	0
Myler	120	0	0	120	0	0
Garden Creek	277	317	80	40	0	0
Stewart Ind.	988	787	0	201	0	0
Soloago	3,438	377	0	3,061	0	0
Rogers Ind.	812	0	0	812	0	0
Hatley	229	0	0	229	0	0
Preslar Ind.	40	40	0	0	0	0
Rocks	0	499	499	0	0	0
Johnson	1,114	0	0	1,114	0	0
Anderson	2,360	2,360	0	0	0	0
Howe	0	80	80	0	0	0
L. Allen	0	520	520	0	0	0
B. Almond	0	53	53	0	0	0
T. Bloxham	0	80	0	0	80	0
A. Brady	0	40	0	0	40	0
C. Criddle	0	40	0	0	40	0
Cambridge	0	1,507	1,507	0	0	0
N. Casperson	0	440	440	0	0	0
Criddle and Sons	0	564	564	0	0	0
R. Davis	0	340	0	0	340	0
Egan	0	635	635	0	0	0
Cottonwood	0	920	0	0	920	0
A. Evans	200	200	0	0	0	0
W. Fuhriman	0	40	40	0	0	0
D. Hadley	0	80	80	0	0	0
Hatley Ind.	114	0	0	114	0	0
G. Jensen	0	33	33	0	0	0
S. Kent	95	95	0	0	0	0
Larson	40	0	0	40	0	0
McNee	0	160	160	0	0	0
Marley	0	0	254	254	0	0
P. Morrison	0	120	120	0	0	0
W. T. Evans	0	0	240	240	0	0
Rt. Hand Graz. Assoc.	0	600	600	0	0	0
Salveson	1,519	0	0	1,519	0	0
Servoss Bros.	200	200	0	0	0	0
Thompson	0	1,340	1,340	0	0	0
Tippits	65	0	0	65	0	0
L. Roberts	0	120	120	0	0	0
TOTAL	159,577 (38%)	312,857 (74%)	251,063 (60%)	108,307 (26%)	10,524 (2%)	0 (0%)

Table 4-29

Vegetation Production

	Present		Projected		
Allotment	Total Biomass (Pounds)	Useable Forage All Classes of Animals (AUMs)	Total Biomass (Pounds)	Useable Forage All Classes of Animals (AUMs)	Net Change (AUMs)
Houtz Canyon	2,537,936	1,160	2,719,543	1,243	+83
Table Mountain	904,384	130	1,006,927	145	+15
Cedar Ridge	521,760	85	582,278	95	+10
Side Canyon	104,352	15	117,285	17	+2
Cold Water	132,179	19	148,560	21	+2
Register Rock	69,568	10	78,190	11	+1
Rock Creek	347,840	50	390,948	56	+6
Curlew	122,943,942	45,382	133,114,725	49,136	+3,754
South Stone	8,442,807	4,683	8,901,653	4,938	+255
South Bull	4,066,393	1,066	4,570,348	1,198	+132
Pleasantview	56,306,150	33,182	60,853,490	35,862	+2,680
Samaria	22,497,004	9,607	24,378,900	10,411	+804
Walker	421,757	194	469,215	216	+22
Madsen	Included in Samaria Allotment				
Hanzel Mountain	13,957,998	5,690	14,760,066	6,017	+327
Big Onion	4,050,000	2,413	4,528,311	2,698	+285
Cedar Mountain	1,413,989	440	1,413,989	440	0
Dairy Creek	3,081,564	1,645	3,363,908	1,796	+151
East Daniels	118,920	15	133,658	17	+2
Deep Creek	159,551	20	179,324	22	+2
East Fork	7,342,577	2,566	7,877,963	2,753	+187
Roy Arbon	50,182,657	22,474	53,147,097	23,801	+1,327
Indian Springs	7,246,210	3,223	7,930,298	3,527	+304
Black Rock	12,731,013	4,861	12,998,873	4,963	+102
Michaud Creek	4,120,753	1,802	4,368,274	1,910	+108
2 1/2 Mile	2,606,738	1,075	2,609,963	1,076	+1
Moonlight Mine	2,953,420	971	2,953,420	971	0
Rapid Creek	3,863,071	1,431	3,863,071	1,431	0
Inkom	6,559,315	2,567	6,874,003	2,690	+123
Stanger	574,909	249	574,909	249	0
Shoestring	3,054,001	1,338	3,160,964	1,385	+47
Bullock	95,097	38	106,883	43	+5
Goodenough	50,370	15	56,612	17	+2
McCammon	3,535,868	1,238	3,805,074	1,332	+94
Price	357,062	88	357,062	88	0
Toponce	4,527,852	2,560	4,581,300	2,590	+30
Hebdon	927,574	364	927,574	364	0
Taylor	394,202	154	425,726	166	+12
Bancroft	8,572,851	2,993	8,718,274	3,044	+51
Wistisen	236,325	106	265,613	119	+13
Fish Creek	2,893,391	1,066	2,931,073	1,080	+14
Rowsell	24,000	4	26,974	5	+1
Lund	4,247,088	1,417	4,277,664	1,427	+10
Crystal	4,500,027	2,158	4,664,064	2,237	+79
Swim	310,323	163	348,782	183	+20
Tate Individual	68,560	24	68,560	24	0
Myler	115,200	48	115,200	48	0
Garden Creek	500,110	203	549,097	223	+20
Stewart Individual	1,076,842	460	1,180,532	504	+44
Soloago	3,274,501	1,204	3,314,579	1,219	+15
Rogers Individual	1,480,192	561	1,480,192	561	0
Hatley	133,600	54	133,600	54	0
Preslar Individual	46,320	10	52,061	11	+1
Rocks	2,173,934	358	2,443,353	402	+44
Johnson	985,098	377	985,098	377	0
Anderson	978,437	907	1,085,921	1,007	+100
Howe	59,626	10	67,016	11	+1
L. Allen	663,200	226	744,055	254	+28
B. Almond	29,036	13	29,800	14	+1
T. Bloxham	38,800	5	39,821	5	0
A. Brady	13,040	2	13,383	2	0
C. Criddle	9,600	2	9,853	2	0
Cambridge	1,003,798	520	1,118,036	579	+59
N. Casperson	198,110	71	222,662	80	+9
Criddle and Sons	464,928	173	522,546	194	+21
R. Davis	160,770	36	165,001	37	+1
Egan	519,408	76	533,076	78	+2
Cottonwood	761,022	248	820,289	267	+19
A. Evans	132,963	43	149,441	48	+5
W. Fuhriman	16,650	2	17,088	2	0
D. Hadley	19,550	9	20,064	9	0
Hatley Individual	96,560	35	96,560	35	0
G. Jensen	23,001	7	25,852	8	+1
S. Kent	22,560	17	23,154	17	0
Larson	58,212	19	58,212	19	0
McNee	101,500	25	111,650	27	+2
Marley	252,062	114	252,062	114	0
P. Morrison	63,618	25	65,292	26	+1
W. T. Evans	173,896	74	173,896	74	0
Rt. Hand Graz. Assoc.	494,240	205	536,494	223	+18
Salveson	1,474,681	553	1,474,681	553	0
Servoss Bros.	178,500	132	190,276	141	+9
Thompson	467,161	176	525,057	198	+22
Tippits	54,684	18	54,684	18	0
L. Roberts	84,000	25	94,410	28	+3
TOTAL	392,452,758	167,794	419,125,432	179,283	+11,489

Summary. Vegetation throughout the EIS area, and especially in riparian zones, would benefit under Alternative C. Projected improvement in range condition, trend, cover and productivity can be summarized as follows:

Range Condition

Status	Good		Fair		Poor	
Present	108,307 ac.	(26%)	228,547 ac.	(54%)	84,310 ac.	(20%)
Future	336,854 ac.	(80%)	84,310 ac.	(20%)	0 ac.	

Range Trend

Status	Upward		Static		Declining	
Present	159,577 ac.	(38%)	251,063 ac.	(60%)	10,524 ac.	(2%)
Future	312,857 ac.	(74%)	108,307 ac.	(26%)	0 ac.	

Vegetative Production

	Present	Future	Net Change
Total Biomass (lbs.)	392,452,758	419,125,432	+26,672,674
Useable Forage (AUMs)	167,794	179,283	+11,489

Cover

Present = 25% Future = 30%

IV. WILDLIFE

More forage, cover and space would be available to wildlife. Competition between livestock and wildlife would be eliminated. Stress and displacement would be reduced; carrying capacities and population levels would be increased for most wildlife species. Riparian areas would recover rapidly and provide excellent habitat for a wide variety of wildlife.

VEGETATIVE ALLOCATION. All endangered, threatened, or sensitive wildlife species would benefit because of an increased prey base and improved habitat conditions. While some raptors require open areas for hunting, an increased prey base would far outweigh the disadvantages of increased grass cover.

The effects on big game would be mixed. Mule deer are successional species that do best in areas where subclimax vegetation stages are maintained via grazing, logging, fire or other disturbance (Dasmann 1964). Livestock grazing can be beneficial to mule deer winter ranges when selective grazing pressure on grasses during the spring and summer promotes browse growth (Jensen et al. 1972, Smith and Doell 1968). Thus, although cessation of livestock grazing in the late summer and fall would benefit mule deer winter range, carrying capacity would be reduced over the long term. Initial population increases would result from increased AUMs immediately available for wildlife use. As the vegetative species slowly moved toward climax, mule deer numbers would begin to decrease because of a loss of winter range carrying capacity. IDFG management objectives through 1990 would still be achieved; however, looking beyond 15-20 years, the deer population would decline unless the mule deer harvest were liberalized to keep populations within the carrying capacity of the range.

Both antelope and elk would be favorably affected by removal of livestock from the public lands. With competition for forage and space no longer an issue, both species would benefit from increases in carrying capacity and populations. (The major problem for antelope is not forage-related; it is the continued agricultural development of native range land in northern Utah that has seriously affected the antelope's migration routes.) IDFG management goals would be met, and there would likely be an expanded hunting opportunity. Where elk are concerned, population increases would accrue only gradually due to depredation on adjacent private lands.

All upland game would benefit from the "No Grazing" alternative. Enhanced riparian areas, with rising water tables, would provide excellent habitat for sage and sharp-tailed grouse. Succulent forb growth would be more available for spring-summer forage. Nesting and brood-rearing cover would improve. Physical disturbance from livestock would cease. Brood-rearing success for all species would increase throughout the EIS area if other adverse factors (weather, predation, human disturbance) remained constant. But over the long term, many upland wet meadows could become choked with dense vegetation and be less productive to sage and sharp-tailed grouse as the forb component of the plant community declined and birds in search of insects were unable to penetrate the dense vegetation.

Waterfowl, furbearers and non-game would all benefit from a rehabilitated riparian habitat brought about by elimination of livestock from the public lands. For waterfowl the improvement would be especially evident at Wiregrass Reservoir. Increased forage would also provide more nesting cover in and around streams and reservoirs. Water quality would improve, thereby increasing available food. Increased herbaceous cover would favorably affect furbearers, and non-game species would show increases in diversity and population as a result of improved habitat, increased food supply and freedom from physical and social contact with livestock.

The elimination of livestock grazing would also have a beneficial impact on the aquatic wildlife habitat (see Table 4-30) . Increases in riparian

Table 4-30

Changes in Fishery Stream Condition

Stream	Miles of Stream by Condition Class							
	Excellent		Good		Fair		Poor	
(Allotment)	Alt. C	Present	Alt. C	Present	Alt. C	Present	Alt. C	Present
Bell Marsh (Shoestring, Bullock)	.2	.2	.5	-	-	.5	-	-
Birch (Shoestring)	-	-	.3	-	-	.3	-	-
Crystal (Crystal)	.5	-	.5	-	.3	1.3	-	-
Garden (Soloago, Preslar)	1.5	.7	1.7	2.0	-	.5	-	-
Goodenough (Shoestring, Goodenough)	.8	-	-	.8	.2	-	-	.2
King (Toponce)	.6	-	.1	.6	-	.1	-	-
Harkness (McCammon)	-	-	-	-	.5	-	.6	1.1
Left Hand Fork Marsh (Larson)	-	-	-	-	.3	-	-	.3
Midnight (Crystal)	1.3	-	1.1	1.3	-	1.1	-	-
Moonlight (Moonlight Mine)	.3	-	.8	-	-	1.1	-	-
Mormon Canyon (Shoestring)	-	-	.5	-	-	.5	-	-
Robber's Roost (None)	.4	.4	-	-	-	-	-	-
Stockton (Rt. Hand, Cottonwood)	1.5	.5	.5	-	-	-	-	1.5
Upper Rock (None)	-	-	.3	.3	-	-	-	-
Walker (Shoestring, None)	.3	-	.3	.3	-	.3	-	-
Total	7.4	1.8	6.6	5.3	1.3	5.7	.6	3.1

vegetation and overhanging stream banks, coupled with the decrease of unstable banks, would increase spawning and pool areas, improve water quality by reducing temperature and sediment load, and increase trout numbers. Although water diversions and off-site impacts would continue to have an adverse impact on many of the small fishery streams in the EIS area, removing livestock from in and around streams would generally improve primary productivity of streams.

Summary. **Alternative C would benefit wildlife. With more food, cover and space available, nearly all wildlife species would respond with increased populations:**

Wildlife/Habitat Group	Forage Allocation		Grazing Management		Range Development	
	Present	Alternative C	Present	Alternative C	Present	Alternative C
Threatened, Endangered and Sensitive	erratic prey base	stable prey base	erratic prey base	stable prey base	15 ferruginous hawk nests	no change
Big Game						
Deer	17,363 AUMs	24,200 AUMs	34% winter range conflict	no conflict	lack of water on 12,000 acres of summer range	no change
Elk	552 AUMs, social intolerance-low	642 AUMs, no social intolerance	insufficient rest of vegetation	no competition with livestock	social intolerance-low	no social problems
Antelope	106 AUMs	181 AUMs	insufficient rest of vegetation	no conflict	some conflict with fences	no change
Upland Game						
Sage Grouse	nesting & brood-rearing areas not seriously impacted	no conflict with livestock	grazing too early & inadequate rest	increased productivity of upland meadows, possibly declining if vegetation becomes impenetrable.	lack of adequate water	water would still be short in Curlew Allotment
Sharp-tailed Grouse	nesting habitat adversely affected	no conflict-population would increase	insufficient rest of vegetation in nesting areas	no conflict-population would increase	not a limiting factor	no conflict
Non-game & Furbearers	declining habitat condition	habitat condition would improve	unknown	habitat conditions would improve	unknown	no impact
Waterfowl	poor nesting conditions	excellent nesting conditions	nesting habitat degraded by early spring use	elimination of conflict	unknown	no impact
Aquatic						
Excellent	1.8 mi.	7.4 mi.	not accessible by livestock	no change	unknown	no impact
Good	5.3 mi.	6.6 mi.	unknown	no change	unknown	no impact
Fair	5.7 mi.	1.3 mi.	riparian grazing too early and heavy	no conflict	unknown	no impact
Poor	3.1 mi.	0.6 mi.	riparian grazing too early and heavy	no conflict	unknown	no impact

V. VISUAL RESOURCES

VEGETATIVE ALLOCATION. To discontinue livestock grazing would have the immediate effect of improving vegetation condition in the EIS area. Forage presently authorized for livestock use would be re-allocated to wildlife and such non-consumptive uses as watershed protection and aesthetics. The effect of the re-allocation would be an improvement in vegetation condition, eventually resulting in the restoration of a more "natural" landscape on public lands within the EIS area. All 431,508 acres of public land in the EIS area would benefit under this alternative, with up to one quarter of the acreage in VRM Class III and Class IV improving by one class (84,000 acres or 19 percent of the total public land).

RANGE DEVELOPMENT. This alternative would allow for the removal of many of the range developments now on public land in the EIS area. Fences, water troughs and other surface developments, though not generally considered visual intrusions, do cause visual contrasts with the natural environment. Removal of these surface developments (see Map 3-1 in packet at back of this volume) would cause localized, short-term adverse impacts, but would result in long-term beneficial impacts to scenic quality, thus increasing aesthetic values.

Some additional fence construction would likely occur on boundaries between public land and private or State land where fences did not exist previously. These fences would create limited new contrasts, but would not be significant in terms of the overall effects of this alternative on visual resources.

Summary. Effects on visual quality can best be summarized by projected changes in VRM classes:

VRM CLASSES	Present VRM Classes		Probable Improving (Class Change)			Probable Declining (Class Change)			Probable Continuation of Present Class		
	Acreage	Percent of Public Land	Acreage	Percent of Class	Percent of Public Land	Acreage	Percent of Class	Percent of Public Land	Acreage	Percent of Class	Percent of Public Land
I	56,531	13	—	—	—	—	—	—	56,531	100	13
II	38,528	9	—	—	—	—	—	—	38,528	100	9
III	94,362	22	23,500	25	5	—	—	—	70,862	75	17
IV	242,087	56	60,500	25	14	—	—	—	181,587	75	42
TOTAL	431,508	100	84,000	—	19	—	—	—	347,508	—	81

VI. WILDERNESS

VEGETATIVE ALLOCATION. Much of the vegetation presently used by livestock would be allocated to non-consumptive uses if the livestock were removed, thus allowing the landscape to return to a more natural condition. The change would be particularly striking in riparian and meadow areas and around water troughs and other range developments where heavy grazing now occurs. This would be especially beneficial in the Wilderness Inventory Units, where naturalness is a primary concern.

RANGE DEVELOPMENT. This alternative would allow for the removal of all surface range developments--fences, water troughs, etc.--that are within the inventory units. This would eliminate much of the imprint of man's presence in these areas, though short-term impacts caused by the removal of these developments would be evident. Minor soil and vegetation disturbance would result.

An additional adverse impact resulting from the elimination of grazing and associated developments on public lands would be increased physical access. The cessation of grazing would eliminate the need for many of the fences which now exist, though some additional fences would likely be constructed on boundaries between public land and private or State land. Easier access would create an opportunity for increased ORV use on the public lands. There would be consequent impacts from increased hunting and fishing, as well as from the new trails which would be created into areas previously less accessible. In turn, the reduction of use by ranchers on many roads could result in road deterioration (less maintenance), making access into some areas more difficult.

Summary. The removal of livestock grazing would reduce vegetation consumption, benefiting the naturalness of the Wilderness Inventory Units. Removal of range developments would eliminate much of man's imprint in these areas, though short-term adverse affects caused by their removal would be evident. Improved physical access (fewer fences) would cause adverse impacts from increased recreational use in the units (e.g., increased ORV use), though deterioration of roads could make access more difficult in some areas.

VII. RECREATION

VEGETATIVE ALLOCATION. Improved habitat conditions for most game species would result from implementation of this alternative. Improved habitat would have the effect of increasing wildlife populations, resulting in improved hunting and fishing quality throughout the EIS area. A projected increase of 4,000 hunter days for upland game (from 6,000 to 10,000) would be likely, along with a minor increase in fisherman days on the two reservoirs (from 10,600 to 10,900). Mule deer would be the exception; an improved habitat over the short term would give way to a habitat dominated more by native grasses, etc., with a corresponding decline in browse species of a sort suitable for mule deer. By 1990 mule deer populations would be declining, resulting in a minor loss of hunter days (150 days lost with an estimated 10,000 hunter days total).

RANGE DEVELOPMENT. Although some existing roads would deteriorate due to reduced use by ranchers, physical access to public lands in the EIS area would improve with the removal of many fences and gates presently needed to control livestock use. But the lack of legal access could result in the closure of some roads crossing private lands. In addition, some new fences would likely be constructed on boundaries between public lands and other ownerships. This would adversely affect access in some areas of interspersed ownership.

Summary. Fishing and hunting quality would improve because of better habitat condition, resulting in projected increases of 300 fisherman days and 4,000 hunter days for upland game. Mule deer habitat would show initial improvement, but by 1990, mule deer hunter days would be down by 150. Though physical access would generally show improvement, deterioration of roads would occur from reduced use, and closures could occur for lack of legal access on many roads crossing private lands.

VIII. CULTURAL RESOURCES

VEGETATIVE ALLOCATION. This alternative would effectively remove one significant factor (livestock grazing) in the destruction of cultural artifacts, according to a 1977 study by Roney. But other uses of the public lands would increase, resulting in additional--though less severe--impacts on cultural resources.

These additional adverse impacts would result primarily from increased recreational use. Improved access, improved hunting and fishing quality, and the restoration of the landscape to a more natural state are all factors which would serve to attract larger numbers of visitors to the public lands in the EIS area. Consequent damage to cultural resource sites could result from unauthorized collection of relics, increased ORV traffic and general vandalism.

Additional negative impacts on cultural sites could result if cattle were trailed across public lands to reach National Forest, State or private lands. The possible extent of these impacts cannot be determined until such stock driveways are identified.

RANGE DEVELOPMENT. There would be no new developments under this alternative, and therefore no additional adverse impacts and likewise no additional protection for sites around springs or in other areas where exclosures might otherwise be constructed.

Summary. Deterioration of cultural sites resulting from livestock grazing would no longer be a problem, though damage from other sources--recreation use in particular--would increase to some extent.

IX. ECONOMICS

Income. This alternative would cause a significant impact on the incomes of the affected ranchers and the livestock industry of the region. Approximately $1.8 million in direct income would be lost by ranchers under the "buy hay" management strategy. This represents 4.2 percent of the total 1977 farm income in the study area. If herds were reduced, $1.4 million in direct income would be lost. The losses to individual ranchers would range, on the average, from $1,700 for Group 1 ranchers to nearly $23,000 for Group 4 ranchers. The ranges within each group would be:

	Min.	Max.	Avg.
Group 1	-$14	-$5,541	-$1,732
Group 2	-$14	-$8,143	-$3,550
Group 3	-$14	-$13,789	-$10,695
Group 4	-$1,058	-$45,310	-$22,647

These would be annual losses and would extend through the long term. The secondary income losses associated with this alternative would be $1,055,115 annually.

The total annual income losses from the time of implementation until the end of the life of the alternative, as a result of direct losses in the livestock industry, would be $2.8 million.

There would be no new range improvements associated with this alternative.

This alternative would lead to increased income in the recreation-related services industry as a result of improved wildlife habitat and increased hunting and fishing days. In the short term the total annual increase (direct and secondary) would be $55,138. This would rise to $66,711 and $57,785 in the intermediate and long terms respectively.

The total net present value of this alternative would be -$29,542,331 and would comprise the following components:

Livestock	-$30,194,848
Construction	0
Services	+$652,517

Employment. The loss of AUMs in this alternative would cause a direct loss of 151 jobs in the livestock industry and 90 secondary jobs. There would be an increase of six jobs due to gains in the services industry for a net loss of 235 jobs. The loss in, or due to, the livestock industry would remain constant throughout the life of the alternative.

Capital Position. This alternative would totally remove any capital position (see Alternative A) that the impacted ranchers might have realized from their federal AUMs.

Summary. Alternative C would lead to short-term income losses of $2,767,338 annually as a result of changes in, or due to, the livestock industry (-$2,822,476) and recreation-related services (+$55,138). In the intermediate term the income loss would be $2,755,765 annually (livestock -$2,822,476; services +$66,711). The long-term income losses would be $2,764,691 annually (livestock -$2,822,476; services +$57,785). The total net present value for the alternative would be -$29,542,331. The net long-term employment loss due to Alternative C would be 235 jobs.

X. SOCIAL CONDITIONS

Economic Well Being. Alternative C would have negative effects on the people in the study area. There would be an overall long-term loss of 235 jobs. It is unlikely that all individuals would be able to secure new employment in the study area. Thus, there would be some out migration. There would be an overall short-term income loss of $2,767,338 and a long-term loss of $2,764,691. A loss of this magnitude would cause some operators to consider selling out. The extent to which each operator is dependent on cattle for survival is not known. Many of them have farming income that could carry them through. Those solely dependent on cattle would experience difficulties.

Social Well Being/Quality of Life. If some operators chose to cease business, there are several effects that could occur. They might have to locate in another area, in which case community organizations would suffer from the loss of membership. The magnitude of this impact would be dependent on the number of people leaving the area. Another negative effect would be the possibility of leaving ranching altogether. The ranching lifestyle is important to people in the study area. Abandonment of this lifestyle could have some serious socio-psychological effects. In the case of a multi-generation ranching family operation, splitting up the operation, or family, could be necessary. All of these would lead to a strong feeling of powerlessness and dissatisfaction with governmental processes. It is anticipated, however, that those ranchers who found it necessary to sell their ranches would continue to ranch in another place. In this case the only social effects would be those associated with leaving familiar surroundings and friends and re-establishing in a new community. Frequently, over a period of time, a move is viewed as a benefit rather than a loss, once new contacts and roots have been established.

Hunting and fishing would be generally improved. Access to recreation areas would be better because of fence removals.

Summary. This alternative would cause more loss of jobs and income than any of the other alternatives. As a result of this loss, there could be losses to communities because of relocation, to families because of potential splitting of family operations and to individuals if ranching were abandoned completely. Recreation and aesthetic activities would be enhanced because of reduced competition for use of the public land. Generally, the social impacts of Alternative C would be the most severe of all of the alternatives.

ALTERNATIVE D

(DECREASED LIVESTOCK USE)

I. SOILS

VEGETATIVE ALLOCATION AND GRAZING MANAGEMENT. Reduced stocking rates under this alternative would help to increase vegetative cover. This would decrease potential erosion rates on 71 allotments, 18 significantly (over 20 percent decrease). See Table 4-1 for potential erosion rates for each allotment.

The Moonlight Mine and Swim Allotments would show minor increases in potential erosion rates from livestock grazing. Thirteen other allotments would show no changes in potential erosion rates. Three of these allotments--Wistisen, South Bull and Black Rock--contain areas of critical SSF values or increasing erosion trends (Map 3-3), so present erosion problems would not be alleviated.

Although stocking rates would be lower, areas where cattle presently gather, such as water troughs, shade, streams, etc., would still receive intensive use. Since cover, compaction and productivity would remain essentially the same as the present situation, no beneficial effects would be seen in these areas of concentrated use.

Soil erosion conditions would improve over 96 percent of the EIS area. Under these light stocking conditions the soil erosion would improve by 19 percent and would stabilize within 7 percent of the climax condition at an estimated 1.98 T/A/Yr. Most of the areas away from high use zones (i.e., water troughs, riparian areas, etc.) would probably show an improvement in infiltration rates, bulk density and productivity. The associated increase in vegetative abundance and variety would tend to loosen the soil through root proliferation, and the legumes would provide the much needed soil nitrogen, thus improving the growth medium and productivity.

Summary. Lower level stocking rates would have long-term beneficial impacts on the soils of 71 allotments or 92 percent of the public land in the EIS area. On 30 of these allotments or 32 percent of the EIS area, significant improvement in potential erosion rates would occur (more than 20 percent). Intensive use would continue in areas where livestock congregate, so that erosion potentials, compaction and soil productivity would not improve in these small areas, but would be enhanced over most of the remaining EIS area. An estimated 1.98 T/A/Yr soil loss would occur, or an improvement of 19 percent from the present condition.

II. WATER RESOURCES

VEGETATIVE ALLOCATION AND GRAZING MANAGEMENT. This alternative would have favorable impacts on overall watershed condition. Protective vegetation would increase on 97 percent of the public land in the EIS area and decrease slightly on 2 percent. Lower level stocking would bring about significantly improved range conditions on 54 percent of the EIS area. Since the reduction in stocking rates would in turn reduce utilization, this alternative would increase infiltration rates by as much as 23 percent over present conditions. Hawkins and Gifford (1979) showed a significant change in infiltration between heavily grazed and light-moderately grazed plots in the west. This increase in infiltration and improved range conditions would help to reduce occurrences of flooding and minimize peak discharges. The reduction in runoff would also have the effect of reducing erosion and sediment yield.

Sixty-five percent of the acreage considered most important to water resources would show significant improvement in watershed condition and reductions in sediment yield. (See Table 4-3 for a tabular summary of projected changes in watershed condition on allotments important to water resources.) These reductions would improve localized conditions, but might not make a difference in terms of overall sediment problems. Livestock would continue to utilize streambank areas on the unfenced areas, but at less intensity than under present conditions. Wood et al. (1978) cite numerous authors who have demonstrated that runoff and sediment production increase as stocking rates increase. It is reasonable to assume that as the stocking rates are reduced, the streamside zone experiences improvement, though probably less than surrounding range due to the tendency of livestock to congregate in riparian areas.

Water quality would be unaffected. Bacterial and other chemical contamination resulting from livestock use would probably not change appreciably. Robbins (1978) indicates that the numbers of animals involved are probably not as important in the overall environmental problems as are hydrogeological and management factors. Although season of use would change somewhat, the periods of contamination would remain basically unchanged.

RANGE DEVELOPMENT. Both watershed condition and water quality would benefit through the range developments scheduled under Alternative D. Fencing of designated riparian areas would alleviate streambank damage caused by livestock. These improvements would benefit King Creek, Goodenough Creek, Bell Marsh Creek, Walker Creek, Birch Creek, Stockton Creek and Left Hand Fork Marsh Creek. Livestock-induced sediment problems would decline, though the effects on overall sediment yield would probably be small. Likewise, localized water quality problems resulting from livestock use would diminish, but would not significantly change the overall regional situation because of the small areas involved.

Summary. Alternative D would improve range condition on 54 percent of the EIS area and increase vegetative cover on 97 percent. Reduction in runoff would lessen flooding, erosion and sediment damage somewhat, but would be small in relationship to the entire region enclosed by the EIS boundary. Significant localized improvement in watershed condition would reduce sediment production and would benefit about 65 percent of the specific areas important to water resources, though the total stream system would likely remain unchanged.

III. VEGETATION

VEGETATIVE ALLOCATION AND GRAZING MANAGEMENT. Although a few allotments totaling 17,040 acres would show increased livestock use as compared to the five-year average, there would be reductions--ranging from 1 to 92 percent--on allotments totaling 397,620 acres (see Table 2-9). Plant composition within each vegetation type on public land would gradually move toward the climax plant community, except in those riparian areas (approximately 114 acres) not enclosed by protective fencing.

Primarily as a result of the reduced stocking rates, vegetation in the area would show long-term improvement in cover, condition, trend and productivity. Overall average vegetative cover, as shown in Table 4-9, would be expected to increase from 25 percent to 28 percent by 1995. The degree of improvement is projected to be the same as that projected under Alternative C (No Grazing). Thus, the amount of acreage in good condition would more than triple (see Table 4-27), the amount in an upward trend would double (see Table 4-28) and vegetative production, as measured by total biomass, would increase by some 26 million pounds (see Table 4-29). Changes of this magnitude would mean a significant improvement in the vegetation on the public lands.

An exception would occur in riparian areas, where 78 percent of the acreage would continue to be adversely affected (see below).

GRAZING MANAGEMENT. Grazing systems would continue unchanged (see Table 2-5), but there would be a favorable adjustment in season of use. Spring turnout dates would be delayed from 5 to 45 days on 177,717 acres or 42 percent of the allotment acreage in the EIS area. These delays would help to assure that the physiological needs of the forage plants could be met and would therefore have a favorable impact on vegetation.

RANGE DEVELOPMENT. Despite the reduced stocking level and delay in spring turnout, livestock grazing pressure in the riparian areas would be expected to remain moderate to heavy, since livestock tend to congregate near water sources. But 31.8 of those 146 acres would be enclosed by protective fencing under terms of Alternative D. This would lessen the adverse impact on riparian vegetation.

Removal of vegetation during installation of the fencing and of the two big game water guzzlers included under this alternative would have minor adverse effects on the vegetative resource. Those impacts (see Table 2-10) would be highly localized and would be virtually eliminated over the long term, with only 0.02 acres disturbed.

Summary. Except in unprotected riparian areas, where livestock would still congregate, the reduced stocking rates under Alternative D would have significant beneficial impacts on vegetation throughout the EIS area. Range condition, trend, cover and productivity would all show marked improvement in the long term, mainly as a result of lower level stocking, but partly too as a result of delayed spring turnout on 42 percent of the allotment acreage. The projected changes:

Range Condition

Status	Good	Fair	Poor
Present	108,307 ac. (26%)	228,547 ac. (54%)	84,310 ac. (20%)
Future	336,854 ac. (80%)	84,310 ac. (20%)	0 ac.

Range Trend

Status	Upward	Static	Declining
Present	159,577 ac. (38%)	251,063 ac. (60%)	10,524 ac.(2%)
Future	312,857 ac. (74%)	108,307 ac. (26%)	0 ac.

Vegetation Production

	Present	Future	Net Change
Total Biomass (lbs.)	392,452,758	419,125,432	+26,672,674
Useable Forage (AUMs)	167,794	179,283	+11,489

Cover

Present = 25% Future = 28%

IV. WILDLIFE

Impacts resulting from this alternative would be similar to those projected for Alternative C. Both food and cover would be abundant, and nearly all wildlife species would respond with increased populations.

VEGETATIVE ALLOCATION. All endangered, threatened, or sensitive wildlife species would benefit from this alternative because of an increased prey base and improved habitat conditions. There would be sufficient grazing to maintain open hunting areas for raptors.

The effects of vegetative allocation on big game would be positive. Mule deer populations would respond favorably to the reduced stocking level (51 percent of the five-year average use). Competition for spring and winter forage would be negligible because this stocking level would not cause a shortage of spring forage, nor would it reduce the amount of palatable shrubs available for wintering deer.

Sufficient livestock grazing would occur under this alternative to enhance winter range for mule deer. Tueller and Tower (1979) have documented shrub stagnation on winter areas that have been totally protected from grazing or grazed solely by mule deer. Loss of productivity would pose a serious long-term threat to future mule deer populations (see discussion under Alternative C). Under Alternative D the shrubs would be able to effectively compete with the grass and forb understory. This level of grazing would enable the resource manager to manipulate livestock grazing to improve mule deer habitat.

The IDFG population goals through 1990 would be achieved, and no long-term decline of winter range productivity would occur. Antelope would be affected as under Alternative C; i.e., grazing livestock would not pose any measurable conflict. The social intolerance elk exhibit toward livestock would still be a factor; however, the reduced number of livestock would lessen the impact on the elk. Elk populations would be expected to increase to the same level as under the "No Grazing" alternative.

Upland game (specifically sage and sharp-tailed grouse), waterfowl, furbearers and non-game would all benefit from reduced stocking levels for livestock. Grouse and waterfowl populations would increase as a result of improved nesting cover, particularly at Wiregrass Reservoir rather than along narrow, stream-related riparian areas. (Because of a lack of specific brood size information in existing populations, these increases cannot be quantified.) In addition, limited livestock grazing would prevent important upland meadows from becoming rank and undesirable for grouse. Since forage availability would generally increase, non-game species would have to compete less with livestock and would profit from reduced physical and social interaction with grazing animals. Furbearers would benefit from the herbaceous cover that would increase throughout the EIS area. But because reduced allocations of livestock AUMs would not prevent concentration of livestock near water sources, all of these species would continue to be adversely affected by an impaired riparian habitat unless the riparian areas were protected.

Aquatic wildlife habitat would be greatly benefited under this alternative. This would be due to the protective fencing (see Range Development below) and not the allocation of forage to livestock.

GRAZING MANAGEMENT. The grazing system impacts on endangered, threatened, or sensitive wildlife species; big game; upland game, non-game and furbearers; and waterfowl would be barely detectable in light of sharply reduced stocking rates. Season of use impacts would be identical to those described in Alternative A (Proposed Action). Again, the significant reduction in livestock AUMs would "mask" the impacts, both beneficial and adverse, that could be attributed specifically to the season of use component. (See Alternative A for a description of impacts associated with grazing systems and specific seasons of use with respect to upland game.)

RANGE DEVELOPMENT. The developments proposed under this alternative (Table 2-10) would benefit all wildlife species. The stream and reservoir fencing would greatly enhance important riparian habitats. Table 4-31 shows those stream segments that would be fenced.

TABLE 4-31

Stream Fencing Proposed Under Alternative D

Stream	Allotment	Stream Miles Fenced
Bell Marsh	Bullock	0.5
Crystal	Crystal	1.3
Goodenough	Goodenough	0.2
King	Toponce	0.5
Midnight	Crystal	1.1
Moonlight	Moonlight Mine	1.1
Mormon Canyon	Shoestring	0.5
Walker	Shoestring	0.3
Stockton	Cottonwood	1.5
Total		7.0 miles

The end result of this fencing would be to achieve the stream condition ratings as identified under Alternative C (see Table 4-30). The impacts associated with the two big game guzzlers on Hanzel Mountain and the fencing at Wiregrass Reservoir would be the same as those described under Alternative A.

Summary. Reduced stocking rates for livestock, coupled with the protective fencing proposed for seven miles of riparian habitat, make Alternative D a favorable alternative for wildlife. Food, cover and habitat variety would increase. Nearly all wildlife species would show a positive response:

Wildlife/Habitat Group	Forage Allocation		Grazing Management		Range Development	
	Present	Alternative D	Present	Alternative D	Present	Alternative D
Threatened, Endangered and Sensitive	erratic prey base	stable prey base	erratic prey base	stable prey base	15 ferruginous hawk nests	no change
Big Game						
Deer	17,363 AUMs	24,200 AUMs	34% winter range conflict	improved carrying capacity on winter range	12,000 acres summer range without water	12,000 acres summer range with water
Elk	552 AUMs, social intolerance-low	642 AUMs, social intolerance-lower	insufficient rest of vegetation	adequate rest of vegetation	social intolerance-low	no social problems
Antelope	106 AUMs	181 AUMs	insufficient rest of vegetation	increased rest of vegetation	some conflict with fences	no change
Upland Game						
Sage Grouse	nesting & brood-rearing areas not seriously impacted	no change	too early season of use	productivity of upland meadows would increase	lack of adequate water	some benefit due to guzzlers on Hanzel Mountain
Sharp-tailed Grouse	nesting habitat adversely affected	nesting cover to improve	insufficient rest of vegetation in nesting areas	rest pastures would benefit nesting conditions	not a limiting factor	some improvement in brood-rearing habitat
Non-game & Furbearers	declining habitat condition	stable habitat condition	unknown	no change	unknonwn	fencing of riparian area would enhance habitat
Waterfowl	poor nesting condition	excellent nesting conditions at Wiregrass	nesting habitat degraded by early spring use	no change	poor production	50% production increase at Wiregrass
Aquatic						
Excellent	not accessible by livestock	no change	not accessible by livestock	no change	1.8 mi.	7.4 mi.
Good	unknown	no change	unknown	no change	5.3 mi.	6.6 mi.
Fair	too many cattle in riparian area	no change*	riparian grazing too early and heavy	no change*	5.7 mi.	1.3 mi.
Poor	too many cattle in riparian area	no change*	riparian grazing too early and heavy	no change*	3.1 mi.	0.6 mi.

*The fencing proposed would mitigate these grazing impacts.

V. VISUAL RESOURCES

VEGETATIVE ALLOCATION. The reduction in the authorized level of stocking under this alternative would decrease the amount of forage allocated to livestock use to 33,082 AUMs, while increasing the amount allocated to wildlife and non-consumptive uses. Scenic quality would benefit, in general, throughout the EIS area as a result of the improved vegetation condition brought about by reduced forage consumption. Of the total public land acreage, only 5 percent (20,509 acres) would receive grazing use at or above the present level, and no downward adjustments in VRM classifications would be expected. The remaining acreage (410,999 acres or 95 percent of total public land) would show improved scenic quality over both the short and long term. Of this acreage, up to one tenth of the Class III and IV areas (33,500 acres or 8 percent of the total public land) would be expected to be upgraded by one VRM class. It should be noted, though, that in areas where grazing impacts are heaviest (riparian and meadow areas and around water developments), livestock use would continue to cause substantial impacts.

RANGE DEVELOPMENT. Though no visual quality constraints have been incorporated into this alternative, adverse impacts would be minimal. Due to the small number of acres affected by the construction of 15.6 miles of fence and two big game guzzlers--0.5 acre of VRM Class I, 0.84 acre of Class II, 9.84 acres of Class III and 8.04 acres of Class IV--there would be only very limited localized impacts on scenic quality which would be most evident over the short term.

Summary. Effects on visual quality can best be summarized by projected changes in VRM classes:

VRM CLASSES	Present VRM Classes		Probable Improving (Class Change)			Probable Declining (Class Change)			Probable Continuation of Present Class		
	Acreage	Percent of Public Land	Acreage	Percent of Class	Percent of Public Land	Acreage	Percent of Class	Percent of Public Land	Acreage	Percent of Class	Percent of Public Land
I	56,531	13	—	—	—	—	—	—	56,531	100	13
II	38,528	9	—	—	—	trace	trace	trace	38,528	100	9
III	94,362	22	9,000	10	2	trace	trace	trace	85,362	90	20
IV	242,087	56	24,500	10	6	—	—	—	217,587	90	50
TOTAL	431,508	100	33,500	—	8	trace	—	trace	398,008	—	92

Only minor localized impacts, primarily short-term, would result from the proposed fencing and construction of two big game guzzlers. Acreages disturbed by VRM class are:

Class I	Class II	Class III	Class IV	Total
less than 1	less than 1	10	8	19

VI. WILDERNESS

VEGETATIVE ALLOCATION. The amount of vegetation authorized for livestock use would be reduced to 33,082 AUMs, with increased allocations to wildlife and non-consumptive uses. No adverse effects on vegetation condition or trend or on soil erosion rates would result. The five inventory units, therefore, would not be affected by the vegetative allocation.

RANGE DEVELOPMENT. Two big game guzzlers would be installed in the Hanzel Mountain unit. Installation of these guzzlers would cause minor localized disturbance (0.25 acre per guzzler) over the short term, but restraints incorporated into their design and location would greatly reduce any impacts on wilderness suitability over the long term.

None of the proposed riparian fences would be in Wilderness Inventory Units.

Summary. Vegetative allocations would have no adverse effects on the Wilderness Inventory Units.

One half acre in the Hanzel Mountain unit would be disturbed as a result of installation of two big game guzzlers, but wilderness suitability would not be impaired over the long term.

VII. RECREATION

VEGETATIVE ALLOCATION AND GRAZING MANAGEMENT. Habitat condition for most game species would show considerable improvement with the reduction in livestock AUMs, resulting in improved hunting and fishing quality. The changes in seasons of use under this alternative would also benefit some game species. Only minimal benefit to stream habitat for game fish would occur, since concentrated grazing use would continue along stream banks. The rainbow trout fisheries in Hawkins and Wiregrass Reservoirs would not be affected to any measurable degree; projected fisherman days would remain at 10,600. Mule deer, the most important game species in the area, would benefit to an extent sufficient to generate an estimated 2,850 additional hunter days by 1990 (13,000 total). Upland game habitat would also be improved, at least in localized areas, providing for population increases among these species. Resulting projections show an additional 3,000 hunter days (9,000 total) by 1990.

RANGE DEVELOPMENT. Construction of 15.6 miles of fence (along 7 miles of stream and around Wiregrass Reservoir) would improve fishery quality in these areas. Since present fisherman day figures are not available for most of these areas, no projected change in future estimates can be made.

This fencing would affect physical access on a site specific basis, but the overall effect on accessibility would be minimal.

Summary. Long-term improvement in habitat condition for most game species would result in projected increases of 2,850 hunter days for mule deer and 3,000 hunter days for upland game by 1990 (above "present situation" projections). The fencing of 7 miles of stream and Wiregrass Reservoir would improve fishery quality, although changes in fisherman days (10,600) cannot be projected. Localized adverse effects on accessibility would result from the new fences.

VIII. CULTURAL RESOURCES

VEGETATIVE ALLOCATION. With livestock allocations reduced to 33,082 AUMs, adverse impacts to cultural resources in the EIS area would be lessened. All 10 allotments with recorded cultural sites would have reductions in livestock use, with only eight of the total 85 allotments showing an increase. The overall effect of this alternative would be to reduce the level of trampling damage to cultural sites, but not by a percentage equal to the percentage of reduction in livestock use. This is because most cultural sites (at least 35 sites, 75 percent of all recorded sites) are located in areas where livestock tend to congregate, such as spring heads, meadows and along stream banks. A reduction in total numbers would not eliminate this tendency of livestock to gather in areas where cultural sites may exist.

RANGE DEVELOPMENT. None of the recorded cultural sites would be affected by any of the fencing or by the big game guzzlers. It would be possible, though, to either damage (through construction) or benefit (by excluding livestock) unknown cultural sites in these areas.

Summary. Adverse impacts resulting from grazing would still occur on all 47 recorded cultural sites, but at a slightly lower intensity than at present. The projected improvement is slight because 75 percent (or more) of the recorded sites are in intensive use areas (e.g., around springs, along stream banks, etc.) where livestock tend to congregate regardless of the stocking rate.

IX. ECONOMICS

Income. This alternative would have a significant impact on the incomes of the affected ranchers in the EIS area. Approximately $929,000 in direct income would be lost by ranchers under the "buy hay" management strategy. This represents 2.2 percent of the total 1977 farm income in the study area. If herds were reduced, approximately $750,000 in direct income would be lost. The losses to individual ranchers would range, on the average, from $907 for Group 1 ranchers to $11,692 for Group 4 ranchers. The ranges within each size group would be:

	Min.	Max.	Avg.
Group 1	+$1,541	-$4,694	-$907
Group 2	+$1,991	-$2,772	-$2,000
Group 3	+$2,471	-$9,075	-$5,565
Group 4	-$159	-$21,779	-$11,692

These would be annual losses and would extend through the long term. The secondary income losses associated with this alternative would be approximately $550,000 annually.

The total annual income losses in, or as a result of, the livestock industry would be $1,484,309.

A total of $47,000 would be spent for the riparian fencing and big game water guzzlers included under this alternative. Of this, 26 percent or $12,220 would be the cost of labor and would be considered the direct income impact of project installation. This would be an additional $2,444 annually during construction. Based on the income multiplier calculated by DYRAM for the construction industry, the secondary income impacts would be $1,581 annually. The direct and secondary income increase would be $4,025 annually during the five years of project installation.

Maintenance of the improvements would cost $1,136 annually from year six through the end of the project life. Approximately 80 percent ($909) of this would be the labor cost and would be considered the direct income impact. The secondary income impact (based on the construction multiplier calculated by DYRAM) would be $588 annually. The direct and secondary income increase would then be $1,497 annually from year six through year 20.

This alternative would lead to increased income in the recreation-related services industry as a result of improved wildlife habitat and increased hunting and fishing days. In the short term the total annual income increase (direct and secondary) would be $109,774. This would increase to $143,216 in the intermediate term and $120,624 in the long term.

The total net present value of this alternative would be -$14,492,466 and would comprise the following components:

Livestock	-$15,879,138
Construction	+$26,416
Services	+$1,360,256

Employment. The loss of AUMs would cause a direct loss of 79 jobs in the livestock industry and an additional loss of 47 secondary jobs. In the short term there would be an increase of 11 jobs due to gains in the services industry for a total net loss of 115 jobs. Continuing increases in the services sector would reduce this loss to 112 jobs in the intermediate term and 114 jobs in the long term. The loss in, or due to, the livestock industry would remain constant throughout the life of the alternative. Income gains in the construction industry would not be sufficient to affect employment.

Capital Position. Although not as severely as in Alternative C, this alternative would impact the ranchers' capital position as identified in Alternative A. In relative terms, it would be nearly a midpoint between Alternatives A and C in severity.

Summary. Alternative D would lead to short-term income losses of $1,370,510 annually as a result of changes in, or due to, the livestock industry (-$1,484,309), construction (+$4,025) and services (+$109,774). In the intermediate term the income losses would be $1,339,597 annually (livestock -$1,484,309; construction +$1,497; services +$143,215). The long-term income losses would be $1,362,188 annually (livestock -$1,484,309; construction +$1,497; services +$120,624). The total net present value of this alternative would be -$14,492,466. The net long-term employment losses due to Alternative D would be 114 jobs.

X. SOCIAL CONDITIONS

Economic Well Being. In its effect on the people and communities of the study area, this alternative would be similar to, but less severe than, Alternative C (No Grazing). There would be long-term employment losses of 114 jobs and income losses of $1,362,188.

Social Well Being/Quality of Life. Because of the adverse economic impacts noted above, overall social well being would be adversely affected. This despite the fact that there would be significant gains in hunting and fishing opportunities. From a recreation standpoint, this alternative would be the most beneficial of all.

Summary. This alternative, though beneficial to recreationists, would have negative effects on the ranching community. Generally, the adverse social impacts of Alternative D would be greater than those under Alternatives A, B and E, but less severe than those projected under Alternative C.

ALTERNATIVE E

(NO ACTION-CONTINUE EXISTING SITUATION)

I. SOILS

VEGETATIVE ALLOCATION AND GRAZING MANAGEMENT. Under this alternative, the existing situation would continue. Livestock management and utilization would be unchanged. Map 3-3 shows the areas where the erosion trend would be expected to increase under present management and use. Areas of increasing erosion trends and with moderate or critical SSF values exist within 12 allotments. The erosion problems on these allotments would increase with the continuation of present grazing levels.

Twenty-one allotments containing 37 percent of the public land acreage in the EIS area would show increasing erosion rates. Three allotments--South Bull, Thompson and Criddle (1 percent of the public land)--would show significant increases in potential erosion rates due to decreases in vegetative cover. Twenty allotments containing 14 percent of the total public acreage would show a decrease in potential erosion rates. Soil erosion would decrease significantly only on the Inkom Allotment (see Table 4-1). Three allotments or 2 percent of the public land would maintain the 60 percent vegetative cover needed for watershed protection.

Summary. With the "No Action" alternative, potential erosion rates would increase on 37 percent of the public land. Significantly increased potential erosion rates on three allotments or 1 percent of the public land would result in long-term adverse impacts. Fourteen percent of the public land would decrease in potential erosion rates, 1 percent significantly.

II. WATER RESOURCES

VEGETATIVE ALLOCATION AND GRAZING MANAGEMENT. Protective vegetative cover would remain unchanged on 81 percent of the public acreage in the EIS area, while increasing on 10 percent. Little improvement in watershed condition would be expected under this alternative. One allotment (Inkom, 5,511 acres) would improve slightly and possibly show a reduction in sediment production. All other areas would remain near the present conditions. (See Table 4-3 for a tabular summary of projected changes in watershed condition on allotments important to water resources.)

Summary. Little improvement in watershed condition would be expected under this alternative.

III. VEGETATION

VEGETATIVE ALLOCATION. The authorized stocking rate for this alternative is the current five-year average licensed use of each operator. On 39 allotments totaling 138,229 acres this would be above the carrying capacity of the range as determined by a 1977-78 vegetation production inventory (see proposed short-term adjustments from five-year average, Table 2-7).

Stocking rates would be at or below the carrying capacity on 287,027 acres or 66 percent of the public land in the EIS area. Overall, there would be slight improvement expected in range condition, trend and vegetative production. Changes in vegetation types would be negligible. Table 4-32 indicates the projected changes in condition, while Table 4-33 shows the projected change in trend and Table 4-9 the projected change in cover. Changes in trend are subject to changes in condition. Since projected changes in condition are slight, trend is expected to stabilize on much of the public acreage by 1995. As a result of the condition changes, vegetative production would show a long-term increase in the amount of 1,627,998 pounds if measured as total biomass or 734 AUMs if measured as useable forage (see Table 4-34). Note that a few allotments indicate little or no change in projected production, even though the stocking level exceeds inventoried carrying capacity. This is because these allotments (a) have been grazed at or near the current stocking level for many years, and (b) contain steep slopes which, though technically "unsuitable" for livestock grazing, are "useable" and regularly used by the livestock without apparent change to the resource.

GRAZING MANAGEMENT. Grazing systems and seasons of use would continue as presently established (see Table 2-5). Twenty-one allotments totaling 177,717

Table 4-32

Range Condition

Acreage

Allotment	Good		Fair		Poor	
	Present	Future	Present	Future	Present	Future
Houtz Canyon	722	722	1,628	1,628	617	617
Table Mtn.	0	0	925	925	115	115
Cedar Ridge	0	0	550	550	50	50
Side Canyon	0	0	120	120	0	0
Cold Water	0	0	152	152	0	0
Register Rock	0	0	80	80	0	0
Rock Creek	0	0	400	400	0	0
Curlew	15,484	18,052	85,607	84,178	37,982	36,843
South Stone	5,108	6,344	5,152	4,324	1,702	1,294
South Bull	0	0	4,938	4,938	0	0
Pleasantview	0	0	41,210	41,210	17,816	17,816
Samaria	1,664	1,664	15,351	15,351	8,268	8,268
Walker	0	0	486	486	66	66
Madsen	- - - - Small area figured in with Samaria - - - -					
Hanzel Mtn.	2,744	6,173	4,830	4,766	4,739	1,374
Big Onion	45	45	6,639	6,639	366	366
Cedar Mtn.	2,001	2,001	0	0	0	0
Dairy Creek	0	0	2,202	2,202	1,118	1,118
East Daniels	0	0	120	120	0	0
Deep Creek	0	0	161	161	0	0
East Fork	1,003	752	3,846	3,135	2,511	3,473
Roy Arbon	19,603	19,603	22,155	22,155	4,298	4,298
Indian Springs	1,618	1,424	7,873	7,122	916	1,861
Black Rock	9,059	9,059	2,082	2,082	0	0
Michaud Cr.	2,049	2,049	2,166	2,166	0	0
2 1/2 Mile	2,477	2,477	0	0	141	141
Moonlight Mine	2,223	2,223	0	0	0	0
Rapid Creek	3,051	3,051	0	0	0	0
Inkom	3,223	5,511	2,288	0	0	0
Stanger	548	548	0	0	0	0
Shoestring	1,581	2,281	700	0	0	0
Bullock	0	0	195	166	0	29
Goodenough	0	0	23	23	0	0
McCammon	1,164	1,164	2,084	2,084	0	0
Price	265	265	0	0	0	0
Toponce	3,837	3,837	454	454	0	0
Hebdon	791	791	0	0	0	0
Taylor	135	411	276	0	0	0
Bancroft	9,336	7,693	1,664	2,980	0	327
Wistisen	0	0	215	215	0	0
Fish Creek	2,042	2,042	238	238	270	270
Rowsell	0	0	40	40	0	0
Lund	5,208	5,208	361	361	0	0
Crystal	3,437	3,868	1,390	1,087	413	285
Swim	0	0	281	281	0	0
Tate Ind.	80	80	0	0	0	0
Myler	120	120	0	0	0	0
Garden Creek	40	317	277	0	40	40
Stewart Ind.	201	988	787	0	0	0
Soloago	3,061	3,438	377	0	0	0
Rogers Ind.	812	812	0	0	0	0
Hatley	229	229	0	0	0	0
Preslar Ind.	0	40	40	0	0	0
Rocks	0	0	499	314	0	185
Johnson	1,114	1,114	0	0	0	0
Anderson	0	2,012	2,012	348	348	0
Howe	0	0	80	80	0	0
L. Allen	0	0	509	509	11	11
B. Almond	0	0	0	0	53	53
T. Bloxham	0	0	0	0	80	80
A. Brady	0	0	0	0	40	40
C. Criddle	0	0	0	0	40	40
Cambridge	0	0	1,347	1,347	160	160
N. Casperson	0	0	440	400	0	40
Criddle and Sons	0	0	564	564	0	0
R. Davis	0	0	0	0	340	340
Egan	0	0	0	0	635	635
Cottonwood	0	0	480	480	440	440
A. Evans	0	0	200	200	0	0
W. Fuhriman	0	0	0	0	40	40
D. Hadley	0	0	0	0	80	80
Hatley Ind.	114	114	0	0	0	0
G. Jensen	0	0	33	33	0	0
S. Kent	0	0	0	0	95	95
Larson	40	40	0	0	0	0
McNee	0	0	120	120	40	40
Marley	254	254	0	0	0	0
P. Morrison	0	0	0	0	120	120
W. T. Evans	240	240	0	0	0	0
Right Hand Grazing	0	0	360	360	240	240
Salveson	1,519	1,519	0	0	0	0
Servoss Bros.	0	0	80	80	120	120
Thompson	0	0	1,340	0	0	1,340
Tippits	65	65	0	0	0	0
L. Roberts	0	0	120	120	0	0
TOTAL	108,307 (26%)	120,640 (28%)	228,547 (54%)	217,774 (52%)	84,310 (20%)	82,750 (20%)

Table 4-33

Range Trend

Acreage

	Upward		Static		Declining	
Allotment	Present	Future	Present	Future	Present	Future
Houtz Canyon	0	0	2,967	2,967	0	0
Table Mtn.	0	0	1,040	1,040	0	0
Cedar Ridge	0	0	600	600	0	0
Side Canyon	0	0	120	120	0	0
Cold Water	0	0	152	152	0	0
Register Rock	0	0	0	80	80	0
Rock Creek	0	0	400	400	0	0
Curlew	20,050	2,568	111,392	136,505	7,631	0
South Stone	3,258	1,236	8,704	10,726	0	0
South Bull	0	0	4,938	4,938	0	0
Pleasantview	34,467	0	23,166	59,026	1,393	0
Samaria	20,723	0	4,560	25,283	0	0
Walker	0	0	552	552	0	0
Madsen	- - - - Figured in with Samaria - - - -					
Hanzel Mtn.	8,699	3,429	3,614	8,884	0	0
Big Onion	7,050	0	0	7,050	0	0
Cedar Mtn.	0	0	2,001	2,001	0	0
Dairy Creek	3,320	0	0	3,320	0	0
East Daniels	0	0	120	120	0	0
Deep Creek	0	0	161	161	0	0
East Fork	0	0	7,360	6,398	0	962
Roy Arbon	26,977	0	19,079	46,056	0	0
Indian Springs	424	0	9,983	9,462	0	945
Black Rock	0	0	11,141	11,141	0	0
Michaud Cr.	3,134	0	1,081	4,215	0	0
2 1/2 Mile	1,056	0	1,562	2,618	0	0
Moonlight Mine	1,590	0	633	2,223	0	0
Rapid Creek	0	0	3,051	3,051	0	0
Inkom	5,511	2,228	0	3,223	0	0
Stanger	548	0	0	548	0	0
Shoestring	2,281	700	0	1,581	0	0
Bullock	0	0	195	166	0	29
Goodenough	0	0	23	23	0	0
McCammon	3,248	0	0	3,248	0	0
Price	265	0	0	265	0	0
Toponce	4,163	0	128	4,291	0	0
Hebdon	791	0	0	791	0	0
Taylor	411	276	0	135	0	0
Bancroft	0	0	11,000	9,030	0	1,970
Wistisen	0	0	215	215	0	0
Fish Creek	0	0	2,550	2,550	0	0
Rowsell	0	0	40	40	0	0
Lund	0	0	5,569	5,569	0	0
Crystal	0	431	5,240	4,809	0	0
Swim	0	0	281	281	0	0
Tate Ind.	0	0	80	80	0	0
Myler	120	0	0	120	0	0
Garden Creek	277	277	80	80	0	0
Stewart Ind.	988	787	0	201	0	0
Soloago	3,438	377	0	3,061	0	0
Rogers Ind.	812	0	0	812	0	0
Hatley	229	0	0	229	0	0
Preslar Ind.	40	40	0	0	0	0
Rocks	0	0	499	314	0	185
Johnson	1,114	0	0	1,114	0	0
Anderson	2,360	2,360	0	0	0	0
Howe	0	0	80	80	0	0
L. Allen	0	0	520	520	0	0
B. Almond	0	0	53	53	0	0
T. Bloxham	0	0	0	80	80	0
A. Brady	0	0	0	40	40	0
C. Criddle	0	0	0	40	40	0
Cambridge	0	0	1,507	1,507	0	0
N. Casperson	0	0	440	400	0	40
Criddle and Sons	0	0	564	564	0	0
R. Davis	0	0	0	340	340	0
Egan	0	0	635	635	0	0
Cottonwood	0	0	0	920	920	0
A. Evans	200	0	0	200	0	0
W. Fuhriman	0	0	40	40	0	0
D. Hadley	0	0	80	80	0	0
Hatley Ind.	114	0	0	114	0	0
G. Jensen	0	0	33	33	0	0
S. Kent	95	0	0	95	0	0
Larson	40	0	0	40	0	0
McNee	0	0	160	160	0	0
Marley	0	0	254	254	0	0
P. Morrison	0	0	120	120	0	0
W. T. Evans	0	0	240	240	0	0
Rt. Hand Graz. Assoc.	0	0	600	600	0	0
Salveson	1,519	0	0	1,519	0	0
Servoss Bros.	200	0	0	200	0	0
Thompson	0	0	1,340	0	0	1,340
Tippits	65	0	0	65	0	0
L. Roberts	0	0	120	120	0	0
TOTAL	159,577 (38%)	14,769 (4%)	251,063 (60%)	400,924 (95%)	10,524 (2%)	5,471 (1%)

Table 4-34

Vegetation Production

	Present		Projected		
Allotment	Total Biomass (Pounds)	Useable Forage All Classes of Animals (AUMs)	Total Biomass (Pounds)	Useable Forage All Classes of Animals (AUMs)	Net Change (AUMs)
Houtz Canyon	2,537,936	1,160	2,537,936	1,160	0
Table Mountain	904,384	130	904,384	130	0
Cedar Ridge	521,760	85	521,760	85	0
Side Canyon	104,352	15	104,352	15	0
Cold Water	132,179	19	132,179	19	0
Register Rock	69,568	10	69,568	10	0
Rock Creek	347,840	50	347,840	50	0
Curlew	122,943,942	45,382	123,249,089	45,495	+113
South Stone	8,442,807	4,683	8,552,882	4,744	+61
South Bull	4,066,393	1,066	4,066,393	1,066	0
Pleasantview	56,306,150	33,182	56,306,150	33,182	0
Samaria	22,497,004	9,607	22,497,004	9,607	0
Walker	421,757	194	421,757	194	0
Madsen	----------------------------Included in Samaria Allotment----------------------------				
Hanzel Mountain	13,957,998	5,690	14,527,428	5,922	+232
Big Onion	4,050,000	2,413	4,050,000	2,413	0
Cedar Mountain	1,413,989	440	1,413,989	440	0
Dairy Creek	3,081,564	1,645	3,081,564	1,645	0
East Daniels	118,920	15	118,920	15	0
Deep Creek	159,551	20	159,551	20	0
East Fork	7,342,577	2,566	7,287,385	2,547	-19
Roy Arbon	50,182,657	22,474	50,182,657	22,474	0
Indian Springs	7,246,210	3,223	7,213,160	3,208	-15
Black Rock	12,731,013	4,861	12,731,013	4,861	0
Michaud Creek	4,120,753	1,802	4,120,753	1,802	0
2 1/2 Mile	2,606,738	1,075	2,606,738	1,075	0
Moonlight Mine	2,953,420	971	2,953,420	971	0
Rapid Creek	3,863,071	1,431	3,863,071	1,431	0
Inkom	6,559,315	2,567	6,874,003	2,690	+123
Stanger	574,909	249	574,909	249	0
Shoestring	3,054,001	1,338	3,160,964	1,385	+47
Bullock	95,097	38	94,212	37	-1
Goodenough	50,370	15	50,370	15	0
McCammon	3,535,868	1,238	3,535,868	1,238	0
Price	357,062	88	357,062	88	0
Toponce	4,527,852	2,560	4,527,852	2,560	0
Hebdon	927,574	364	927,574	364	0
Taylor	394,202	154	425,726	166	+12
Bancroft	8,572,851	2,993	8,521,451	2,975	-18
Wistisen	236,325	106	236,325	106	0
Fish Creek	2,893,391	1,066	2,893,391	1,066	0
Rowsell	24,000	4	24,000	4	0
Lund	4,247,088	1,417	4,247,088	1,417	0
Crystal	4,500,027	2,158	4,563,278	2,188	+30
Swim	310,323	163	310,323	163	0
Tate Individual	68,560	24	68,560	24	0
Myler	115,200	48	115,200	48	0
Garden Creek	500,110	203	547,675	222	+19
Stewart Individual	1,076,842	460	1,180,532	504	+44
Soloago	3,274,501	1,204	3,314,579	1,219	+15
Rogers Individual	1,480,192	561	1,480,192	561	0
Hatley	133,600	54	133,600	54	0
Preslar Individual	46,320	10	52,061	11	+1
Rocks	2,173,934	358	2,153,263	355	-3
Johnson	985,098	377	985,098	377	0
Anderson	978,437	907	1,085,921	1,007	+100
Howe	59,626	10	59,626	10	0
L. Allen	663,200	226	663,200	226	0
B. Almond	29,036	13	29,036	13	0
T. Bloxham	38,800	5	38,800	5	0
A. Brady	13,040	2	13,040	2	0
C. Criddle	9,600	2	9,600	2	0
Cambridge	1,003,798	520	1,003,798	520	0
N. Casperson	198,110	71	197,648	70	-1
Criddle and Sons	464,928	173	464,928	173	0
R. Davis	160,770	36	160,770	36	0
Egan	519,408	76	519,408	76	0
Cottonwood	761,022	248	761,022	248	0
A. Evans	132,963	43	128,963	42	-1
W. Fuhriman	16,650	2	16,650	2	0
D. Hadley	19,550	9	19,550	9	0
Hatley Individual	96,560	35	96,560	35	0
G. Jensen	23,001	7	23,001	7	0
S. Kent	22,560	17	22,560	17	0
Larson	58,212	19	58,212	19	0
McNee	101,500	25	101,500	25	0
Marley	252,062	114	252,062	114	0
P. Morrison	63,618	25	63,618	25	0
W. T. Evans	173,896	74	173,896	74	0
Rt. Hand Graz. Assoc.	494,240	205	494,240	205	0
Salveson	1,474,681	553	1,474,681	553	0
Servoss Bros.	178,500	132	178,500	132	0
Thompson	467,161	176	455,183	171	-5
Tippits	54,684	18	54,684	18	0
L. Roberts	84,000	25	84,000	25	0
TOTAL	392,452,758	167,794	394,080,756	168,528	+734

acres would continue to receive grazing use too early in the spring to allow for the physiological requirements of the forage vegetation, and 316,985 acres would receive an early grazing treatment; however, 97,897 acres would continue to be rotated from early grazing each year. Also, 59,581 would be grazed after seedripe, and 54,942 acres would receive yearlong rest. Those allotments stocked at or below the carrying capacity, along with those receiving late grazing or rest treatments, would benefit under this alternative.

Riparian areas would continue to receive heavy grazing pressure under this alternative, since streams, reservoirs and springs are natural congregation areas for livestock. Since there would be no fencing, additional grazing systems, new range developments or land treatments to improve livestock distribution, this alternative would continue to keep all riparian areas in a degraded state.

Summary. Implementation of Alternative E would have both positive and adverse impacts on the vegetative resource. These impacts would depend on the stocking rate in relation to carrying capacity. There would be 138,229 acres overstocked. Continuation of the current grazing management would keep the riparian areas in a degraded state. Range condition and vegetative production would show a slight improvement, while trend would tend to stabilize on most of the acreage. The projected changes:

Range Condition

Status	Good		Fair		Poor	
Present	108,307 ac.	(26%)	228,547 ac.	(54%)	84,310 ac.	(20%)
Future	120,640 ac.	(28%)	217,774 ac.	(52%)	82,750 ac.	(20%)

Range Trend

Status	Upward		Static		Declining	
Present	159,577 ac.	(38%)	251,063 ac.	(60%)	10,524 ac.	(2%)
Future	14,769 ac.	(4%)	400,924 ac.	(95%)	5,471 ac.	(1%)

Vegetation Production

	Present	Future	Net Change
Total Biomass (lbs.)	392,452,758	394,080,756	+1,627,998
Useable Forage (AUMs)	167,794	168,528	+734

Cover

Present = 25% Future = 25%

IV. WILDLIFE

VEGETATIVE ALLOCATION. Despite an overall stocking rate 2 percent below the inventoried carrying capacity of the range, 39 allotments comprising 32 percent of the public land would continue to be overgrazed (see proposed short-term adjustments from five-year average, Table 2-7). Habitat quality on those overstocked allotments would continue to decline, and forage competition with wildlife would remain high.

Nearly all endangered, threatened, or sensitive wildlife species would be adversely impacted by this alternative. Raptors and predators would be affected by a deteriorated range condition that would result in an erratic, wildly fluctuating prey base. While grazing on the other 66 percent of the EIS area would be at or below inventoried capacity, there would not be sufficient improvement to offset the impacts anticipated on the overgrazed areas. Long-billed curlew nesting habitat would remain fairly static in the Curlew Allotment. Sharp-tailed grouse and mountain quail would be in a static to slightly upward trend. The white-faced ibis and spotted bat would not be affected by this alternative.

With the exception of some elk, all big game would be adversely affected. The mule deer allocation would be held at the 1978 level rather than some future IDFG projection. Allocation problems previously identified with respect to the Downey Front (see analysis under Alternative A) would also apply here.

Since livestock use would be held 3 percent below the inventoried capacity on the Curlew Allotment, the short-term impact on antelope would be beneficial. As the seedings in Black Pine Valley continued to decline in productivity, serious forage competition with livestock would occur in 10-15 years. This would be especially true for the forb component in the spring. In the long term a decline in the small remnant antelope herd would be expected.

Elk would benefit from this alternative in the Michaud Creek, Inkom, Crystal, Soloago and Johnson Allotments because a continuation of the existing situation would stock the range at a level less than the inventoried capacity for livestock. In the Big Onion Allotment, however, overgrazing at 31 percent above inventoried capacity would continue to have an adverse impact to the elk. Social intolerance between elk and livestock would continue to cause problems under the existing situation.

All upland game on those allotments grazed at or below their inventoried capacities would benefit to some degree. But on those 39 allotments currently overstocked, the converse would be true. Riparian areas would continue to provide sage grouse habitat below potential. The removal of forbs by livestock on spring and summer ranges would have an adverse impact on young birds. This is especially true where forbs are scarce in the composition (Call 1979), as is the case in the Curlew Allotment.

The P. Morrison Allotment, which encompasses Wiregrass Reservoir, is currently being grazed at 80 percent above the inventoried capacity. This degree of overuse would continue to have a highly adverse impact on the waterfowl nesting habitat.

Non-game and furbearers would continue to be adversely impacted on 32 percent of the public land. The remaining 68 percent would maintain a static habitat trend; i.e., no appreciable change.

This alternative would have long-term adverse impacts on aquatic wildlife habitat (see Table 4-35). As mature trees and shrubs died, no new growth would replace them. Streambank erosion would continue, which in turn would lead to increased sedimentation in the stream. Pools would decrease in size and number and water temperature would increase. Spawning areas would be reduced. Trends identified in 1978 would be expected to continue.

Table 4-35

Changes in Fishery Stream Condition

Stream (Allotment)	Miles of Stream by Condition Class Excellent Alt. E	 Excellent Present	 Good Alt. E	 Good Present	 Fair Alt. E	 Fair Present	 Poor Alt. E	 Poor Present
Bell Marsh (Shoestring, Bullock)	.2	.2	-	-	.2	.5	.3	-
Birch (Shoestring)	-	-	-	-	-	.3	.3	-
Crystal (Crystal)	-	-	-	-	.9	1.3	.4	-
Garden (Soloago, Preslar)	.7	.7	2.0	2.0	.5	.5	-	-
Goodenough (Shoestring, Goodenough)	-	-	.8	.8	-	-	.2	.2
King (Toponce)	-	-	-	.6	.6	.1	.1	-
Harkness (McCammon)	-	-	-	-	-	-	1.1	1.1
Left Hand Fork Marsh (Larson)	-	-	-	-	-	-	.3	.3
Midnight (Crystal)	-	-	1.3	1.3	1.1	1.1	-	-
Moonlight (Moonlight Mine)	-	-	-	-	-	1.1	1.1	-
Mormon Canyon (Shoestring)	-	-	-	-	-	.5	.5	-
Robber's Roost (None)	.4	.4	-	-	-	-	-	-
Stockton (Rt. Hand, Cottonwood)	.5	.5	-	-	-	-	1.5	1.5
Upper Rock (None)	-	-	.3	.3	-	-	-	-
Walker (Shoestring, None)	-	-	.3	.3	.3	.3	-	-
Total	1.8	1.8	4.7	5.3	3.6	5.7	5.8	3.1

GRAZING MANAGEMENT. Grazing systems would continue as presently established (see Table 2-5). Because of the high percentage (50 percent) of public land grazed on a seasonal use basis, this alternative affords little opportunity for improved wildlife habitat. Riparian areas would continue to be heavily grazed. A continued, long-term decline in carrying capacity for riparian-associated wildlife would be expected.

Few if any big game AUMs would be expected to accrue to an allotment because of the grazing systems. In other words, the improvements specifically attributable to a given grazing system have already been realized and are considered part of the "existing situation." On the 219,088 acres that would remain in seasonal use, a projected long-term decline would be expected to continue.

Although the antelope-inhabited portion of the Curlew Allotment has been recognized as having a three-treatment rest rotation grazing system, rarely if ever is a third of the area rested in any given year. While it is true that some fields are rested, the general grazing use would normally be the spring of one year and the fall of the next, rather than a true rest rotation. This type of grazing system would have a slight adverse impact on antelope habitat that would intensify as the seedings continued to decline in productivity. Competition for forbs in the spring would intensify. The analysis of elk habitat developed under Alternative A would also generally apply with this alternative.

Impacts on upland game relate primarily to sage grouse. The analysis developed for Alternative A applies here, with the following changes with respect to crucial nesting and brood-rearing habitat: (1) rest rotation 20,900 acres, (2) deferred rotation 11,560 acres, (3) deferred grazing 20,000 acres and (4) seasonal use 95,840 acres. One other difference would be that no riparian areas would be protected from grazing in this alternative. Therefore, sage grouse populations would continue to decline.

Summary. Continued overgrazing of 32 percent of the EIS area would mean continued wildlife-livestock competition for food, space and cover. A further decline in wildlife habitat quality, including a long-term decline in carrying capacity for riparian-associated wildlife, would be expected. Some specifics:

Wildlife/Habitat Group	Forage Allocation		Grazing Management		Range Development	
	Present	Alternative E	Present	Alternative E	Present	Alternative E
Threatened, Endangered and Sensitive	erractic prey base	erratic prey base	erratic prey base	erratic prey base	15 ferruginous hawk nests	no change
Big Game						
Deer	17,363 AUMs	17,206 AUMs,(-263 AUMs on Downey Front)	34% winter range conflict	conflict would intensify	water shortage on 12,000 acres of summer range	no change
Elk	552 AUMs, social intolerance-low	642 AUMs, social intolerance-no change	insufficient rest of vegetation	no change	social intolerance-low	no change
Antelope	106 AUMs, little forage competition with cattle	106 AUMs, forage competition with cattle would increase (probable population decline)	insufficient rest of vegetation	continued lack of rest with increased food competition	some conflict with fences	no change
Upland Game						
Sage Grouse	nesting & brood-rearing areas not seriously impacted	forb removal to adversely affect young birds	too early season of use	use too early, sage grouse numbers to decline	lack of adequate water for sage grouse	no change
Sharp-tailed Grouse	nesting habitat adversely affected	no change	insufficient rest of vegetation in nesting areas	no change	not a limiting factor	no change
Non-Game and Furbearers	declining habitat conditions	continued decline on 32% of public land	unknown	continued decline on seasonal use areas (51% of public land)	unknown	no impact
Waterfowl	poor nesting conditions	no change	nesting habitat degraded by early spring use	no change	unknown	no impact
Aquatic						
Excellent	1.8 mi.	1.8 mi.	not accessible by livestock	no change	unknown	no impact
Good	5.3 mi.	4.7 mi.	unknown	no change	unknown	no impact
Fair	5.7 mi.	3.6 mi.	riparian grazing too early and heavy	no change	unknown	no impact
Poor	3.1	5.8	riparian grazing too early and heavy	no change	unknown	no impact

V. VISUAL RESOURCES

VEGETATIVE ALLOCATION. With forage use by livestock continuing at the five-year average, the present pattern of scenic quality would not be altered significantly. Overuse is presently occurring on 39 allotments--138,229 acres or 32 percent of total public land (see proposed short-term adjustments from five-year average, Table 2-7). Continued overuse would result in a decline by one VRM class for a projected 5,000 acres of Class II and III land, approximately 1 percent of the public land in the EIS area. The remaining public land (293,279 acres or 68 percent) would remain at a static level or show some improvement in scenic quality over the long term. Of this acreage, up to 5 percent (22,000 acres or 10 percent of affected Class III and IV acreages) would be expected to improve sufficiently to justify an upgrading by one VRM class. The result would be a continuation of present trends; scenic quality would continue to decline in some areas and improve in others.

GRAZING MANAGEMENT AND RANGE DEVELOPMENT. Continuation of present grazing management without additional developments would result in a continued deterioration of scenic quality in localized areas. A better distribution of livestock use, either through grazing systems or through range developments, would not be possible under this alternative. Therefore, areas of heavy livestock use, such as at stream banks, around undeveloped springs, around water troughs, etc., would continue to receive heavy pressure, causing visual quality to show a continued decline over gradually enlarging areas. Aesthetic qualities would be adversely affected as a result of this continued decline.

Summary. Effects on visual quality can best be summarized by projected changes in VRM classes:

VRM CLASSES	Present VRM Classes		Probable Improving (Class Change)			Probable Declining (Class Change)			Probable Continuation of Present Class		
	Acreage	Percent of Public Land	Acreage	Percent of Class	Percent of Public Land	Acreage	Percent of Class	Percent of Public Land	Acreage	Percent of Class	Percent of Public Land
I	56,531	13	—	—	—	—	—	—	56,531	100	13
II	38,528	9	—	—	—	1,500	4	Trace	37,028	96	9
III	94,362	22	6,000	6	1	3,500	4	1	84,862	90	20
IV	242,087	56	16,000	7	4	—	—	—	226,087	93	52
TOTAL	431,508	100	22,000	—	5	5,000	—	1	404,508	—	94

VI. WILDERNESS

VEGETATIVE ALLOCATION. According to the Federal Land Policy and Management Act (1976), continued grazing use at pre-1976 levels is permissible on lands in wilderness review, provided unnecessary or undue degradation of the lands and their resources is not occurring. Though this indicates that a continuation of existing grazing levels is allowable, projected changes resulting from this continuation would have adverse effects on the wilderness suitability of all the inventory units. Vegetation trend, in particular, would be altered, resulting in adverse impacts on wilderness characteristics. Grazing use, therefore, would not be of the same manner and degree as when FLPMA was enacted.

Summary. Continued allocation of vegetation at present levels would adversely affect vegetation trends in the five Wilderness Inventory Units, thus adversely affecting wilderness suitability of these areas.

VII. RECREATION

VEGETATIVE ALLOCATION AND GRAZING MANAGEMENT. With 39 allotments being overgrazed at present (see proposed short-term adjustments from five-year average, Table 2-7) and no change in either vegetative allocation or grazing management under this alternative, the present trend in habitat condition and population numbers for most game species would continue. This would result in a gradual deterioration of hunting and fishing quality for most species throughout the EIS area. Projected hunter and fisherman days for 1990 would be the same as those shown in the Bannock-Oneida Planning Area Analyses-10,150 hunter days for mule deer, 6,000 hunter days for upland game, and 10,600 fisherman days (Hawkins and Wiregrass Reservoirs only). These projections were developed assuming a continuation of the existing situation, which is the basic premise of this alternative.

Summary. Participation rates in hunting and fishing would be the same as those projected in the planning system, since this alternative assumes a continuation of the existing situation. Present trends in habitat conditions and population numbers would continue.

VIII. CULTURAL RESOURCES

VEGETATIVE ALLOCATION. Artifact damage from livestock trampling would continue at or near the same frequency and extent as at present. Damage to some cultural sites has already occurred as a result of erosion due to overgrazing (loss of vegetative cover). Presently, 39 allotments are being overgrazed (see proposed short-term adjustments from five-year average, Table 2-7), five of which contain recorded archaeological sites (30 percent of the recorded sites).* Damage to cultural sites would continue to occur on these allotments.

GRAZING MANAGEMENT AND RANGE DEVELOPMENT. With no changes in grazing management and no new developments, concentrated livestock use would continue as at present. Significant damage to cultural sites (particularly around springs and other water sources) has already resulted from this concentrated use and would continue to occur. No additional damage to cultural sites would result from construction of new range developments. In turn, any protective benefits potentially available through range developments (e.g., fenced exclosures around spring developments) would not be realized.

Summary. Damage to cultural resources would remain at or near present levels under this alternative. Impacts would occur with greatest intensity in the 39 allotments (containing 30 percent of the recorded sites) where overgrazing is now occurring and in localized areas of heavy livestock use.

IX. ECONOMICS

Since this alternative would involve no change from current management, there would be no impact on income or on the capital position of livestock operators. Likewise, there would be no effect on employment in the EIS area.

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*Pleasantview Allotment (6 sites), Dairy Creek (1), Big Onion (7), Samaria (2) and Walker (1).

Summary. No economic impacts.

X. SOCIAL CONDITIONS

Economic Well Being. Implementation of this alternative would have no effect on income or employment.

Social Well Being/Quality of Life. Members of the ranching community would be pleased that no change in their operations had been dictated by the government. Recreation users, on the other hand, would be dissappointed that alternatives more favorable to recreation were not chosen. This could be viewed by some as a missed opportunity to enhance the quality of life in the area.

Summary. There would be no impacts on ranchers or recreationists. In terms of social conditions, Alternative E would be the most beneficial of all the alternatives.

LONG-TERM PRODUCTIVITY

The foregoing analyses have identified projected impacts, alternative by alternative, resource by resource. Table 4-36 now brings together the five alternatives to itemize irreversible and irretrievable commitments of resources and to summarize, in comparative form, "the relationship between short-term uses of man's environment and the maintenance and enhancement of long-term productivity" (CEQ Rules and Regulations 1502.16).

For the purpose of this analysis, "irreversible" describes any action, impact or use which is not capable of being reversed. "Irretrievable" means irrecoverable; once used, not readily replaceable. As used in Table 4-36, the "short term" is defined as the time frame needed to achieve the objectives of each alternative. Short-term use is that use the resource is committed to during the short term. The "long term" refers to that time in which impacts from the alternative may still be measured. Long-term productivity is analyzed in terms of natural ecosystem productivity, human productivity and overall productivity.

Table 4-36

RELATIONSHIP BETWEEN SHORT-TERM USES OF MAN'S ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY AND IRREVERSIBLE OR IRRETRIEVABLE COMMITMENTS OF RESOURCES

ALTERNATIVE	SHORT-TERM USE	LONG-TERM PRODUCTIVITY	IRREVERSIBLE	IRRETRIEVABLE
A Proposed Action	Optimize multiple use of resources.	Increase ecological productivity. Increase human productivity. Increase overall productivity.	None	Loss of one sensitive species nesting site. Potential disturbance of all recorded cultural sites, impact severest on 62 percent of these. Loss of forage & water consumed by livestock. Loss of monies, fuel & material used to implement this plan.
B Increased Livestock Use	Maximize livestock and socioeconomic conditions.	Decrease ecological productivity. Increase human productivity. Increase overall productivity.	None	Loss of 3 sensitive species nesting sites. Potential disturbance of all recorded cultural sites, impact severest on 66 percent of these. Loss of fertile topsoil. Loss of forage & water consumed by livestock & monies, fuel & material used to implement this alternative.
C No Livestock Grazing	Allow natural ecological principles to prevail following the removal of all livestock.	Increase ecological productivity. Decrease human productivity. Decrease overall productivity.	None	Loss of red meat that could have been harvested from the renewable forage resource (75,234 AUMs) along with associated economic losses.
D Decreased Livestock Use	Remove approx. 50% of all livestock. Maximize wildlife.	Increase ecological productivity. Decrease human productivity. Increase overall productivity.	None	Potential disturbance of all recorded cultural sites, but at a lower intensity than present. Proportionate loss of red meat & monies from not harvesting the renewable forage resource, 42,152 AUMs.
E No Action-Continue Existing Situation	Maintain status quo.	Decrease ecological productivity. Decrease human productivity. Decrease overall productivity.	None	Potential disturbance of all recorded cultural sites, disturbance severest on 30 percent of these. Loss of 10,085 AUMs that the rangeland is capable of producing without damage to the environment. Loss of fertile topsoil.

CHAPTER 5

CONSULTATION AND COORDINATION

This chapter lists all agencies, organizations and individuals to whom copies of the draft EIS will be sent. All on the list are being requested to comment on the draft, and many have already contributed to its development. Public involvement, as summarized in Chapter 1, is an integral part of BLM's land-use planning. For a detailed account of the Proposed Action's evolution in the planning process and its relationship to non-BLM planning in the study area, see Appendix I and Appendix J.

The following list includes governmental agencies with jurisdiction and expertise, as well as organizations and individuals potentially affected by land-use decisions in the Bannock-Oneida area:

Federal Agencies

National Advisory Council on Historic Preservation
Department of Interior
    Fish & Wildlife Service
    Geological Survey
    Bureau of Indian Affairs
    Bureau of Land Management, Salt Lake District Office
    Bonneville Power Administration
    Heritage Conservation and Recreation Service
Department of Agriculture
    U. S. Forest Service
    Soil Conservation Service
    Animal & Plant Health Inspection Service
Environmental Protection Agency

State Agencies

Idaho Department of Health, Welfare & Environmental Services
Idaho Bureau of Community Affairs
Idaho Bureau of Mines and Geology
Idaho Department of Fish & Game
Idaho Department of Public Lands
Idaho Department of Water Resources
Idaho Department of Parks & Recreation
State Historic Preservation Officer
University of Idaho Extension Service
Idaho State Clearinghouse
Idaho School Board Association

Local Government

Mayor, Snowville, Utah
Mayor, City of Pocatello
Mayor, City of American Falls
Mayor, City of Malad
Southeast Idaho Council of Governments
Oneida County Commissioners
Oneida County Planning Commission
Bannock County Agent
Bannock County Commissioners
Bannock County Planning Commission
Power County Agent
Power County Commissioners
Power County Planning Commission
Shoshone-Bannock Tribal Council
Caribou County Commissioners

Elected Officials, Federal

Senator Frank Church
Senator James McClure
Congressman George Hansen

Elected Officials, State

Senator Dean Van Engelen
Senator Reed W. Budge
Senator Lester A. Hartvigsen
Senator James A. Leese
Senator C. D. "Chick" Bilyeu
Representative Robert C. Geddes
Representative Willard W. Stucki
Representative Myron Jones
Representative Bert W. Marley
Representative Gary Gould
Representative Patricia L. McDermott
Representative W. Rusty Barlow
Representative Dwight W. Horsch

Public Service Organizations

Public Lands Council
Idaho Public Utilities Commission
Utah Power & Light
Idaho Power
Raft River Electric

Organizations

South Central Idaho Cattlemen's Association
Idaho Cattlemen's Association
Idaho Wool Growers
Portneuf Audubon Society
Idaho Environmental Council
Sierra Club
Southeast Idaho Rod & Gun Club
Idaho Historical Society
Malad Chamber of Commerce
Wikes Forest Industries
National Outdoor Coalition
American Falls Chamber of Commerce
League of Women Voters, Pocatello
Wildlife Management Institute
Oneida County Farm Bureau
The Wilderness Society
Natural Resources Defense Council
American Fisheries Society
National Wildlife Federation
National Audubon Society

Individuals

H. Paul Friesma
Karl Holte
William R. Meiners
Ralph Maughan
Chalres Trost
Harold C. Miles
Dick Loper
B. Robert Butler
Herman J. McDevitt
Lionel Oberline
Lou Bucklin
Lloyd Briggs
Farrell Daniels
Glen Ray Downing
Don S. Evans
Orlin C. Moon
Elwood J. Stephens
Ed Scott
All grazing permittees in the Bannock-Oneida Resource Area

APPENDICES

APPENDICES

APPENDIX A

Ecological Site Inventory Method (ESIM) and Forage Allocation Methodology

The Ecological Site Inventory Method is basically an "Ecosystem Inventory." These ecosystems include not only vegetation and soils but also the associated climate, water and animal life. Through these inventories, range sites or ecological sites are identified. A range site is a distinctive kind of range land that differs from other kinds in its ability to produce a characteristic natural plant community. Range sites are ecological subdivisions into which range land is divided for study, evaluation and management.

Soils and climate are the basic building blocks of a range site. However, such factors as fire, grazing animals, man and topography all have an influence on the kinds and amounts of vegetation existing on a site at a given time.

The natural plant community existing on a range site, or which would exist in the absence of abnormal disturbance such as grazing or man caused fire, is termed as the climax plant community. The present vegetation on a range site may or may not be the climax or potential plant community for that site.

The Ecological Site Inventory Method (ESIM) is a process used to identify range sites, determine the production of vegetation on the site and determine the condition of the site. Production of vegetation on the site is determined through clipping and weighing or estimating the weight of vegetation currently produced on the site. Condition is determined by comparing the amount of current vegetation production on the site to the amount that would be produced on that site if it were in climax condition.

Range sites are first identified through the use of soil surveys. For the Bannock-Oneida inventory, the soil survey and ESIM were conducted at the same time.

Specific locations for the productivity portion of the inventory were agreed upon by the soil survey party leader and the vegetation inventory party leader. This was to assure that the productivity for a specific site would not fall in a transition zone or an inclusion. After these sites were selected, vegetation sampling plots were established, each comprising ten individual 9.6 square-foot subplots from which production was estimated and measured. An ocular weight-estimate method was used to determine existing production by species. Production was estimated on all ten subplots, and then two were selected and clipped. The clipped vegetation was weighed and the data was used to correct the estimates. The clipped samples were dried and weighed again to correct for moisture content to obtain dry weight figures. The key forage plant method of utilization, along with utilization cages, was used to derive a utilization correction factor for those plots that were grazed prior to sampling. In addition to the vegetation production information, soil surface factors (watershed rating), observed apparent trend, phenology, suitability, and wildlife data were collected at each sampling plot site.

As a result of the phenological data collected, production adjustments were made according to the following principles:

Grasses, Forbs, Shrubs (Not Including Sagebrush)

Phenology Stage			% Upward Adjustment
Grass	Forb	Shrub	
Boot	Pre-Flower	Fully Formed Leaf	45
Start Flower	Start Flower	Start Flower	40
Peak Flower	Peak Flower	Peak Flower	35

Sagebrush

Phenology Stage	% Upward Adjustment
Fully Formed Leaf	45
Start of Flower Stock Elongation	30
Peak of Flower Stock Elongation	0

In addition to the weight-estimate production samples, BLM Form ISO-4400-1, Range Condition Worksheets, were completed to increase the total number of samples, thereby increasing the validity of the inventory. Although the Range Condition Worksheet provides only an estimation, the estimator periodically contacted the clipping crews to check his estimation accuracy and, if necessary, correct for changes in vegetation weights and stages of phenology.

The current production data was used to calculate the production of each vegetative species by allotment. Proper Use Factors (PUFs), for all classes of animals for the season of use the animals are grazing, were then applied to the total production of each species. The application of Proper Use Factors identified the total forage that was useable for all classes of grazing animals. At this time, the livestock suitability criteria were applied, which delineated that portion of the inventoried biomass that could be used by livestock without causing a deterioration of the vegetative resource.

In addition to the ESIM, other long-term range studies that have been conducted on a continuing basis for many years on several allotments were used to assist in making a proper allocation of forage. BLM has historically gathered data on actual livestock use (the number and length of time livestock are on public lands), plant utilization (the percent of annual growth of vegetation eaten by grazing animals) and range trend (static, improving or declining). This data, if available for a period of several years, can be used to determine the amount of grazing that can be allowed under the proper use concepts.

These livestock actual use, plant utilization, and range trend studies were given equal weight with the ESIM data in determining the amount of forage available for allocation to consumptive uses. Sixty-eight percent of the total grazing allotment acreage has been allocated forage based on the method illustrated below. Allotments include Pleasantview, Samaria, Curlew, South Stone, Dairy Creek, East Fork, Indian Spirngs, Big Onion, Inkom, Bancroft, Stanger, Crystal and Rocks.

Examples:

	Dairy Creek Allotment	South Stone Allotment
a. Total forage biomass on allotment prior to application of PUFs, suitability, actual use, trend or utilization data (all classes of grazing animals).	3,784 AUMs	9,249 AUMs
b. Total forage biomass on allotment after application of PUFs (all classes of grazing animals).	1,645 AUMs	4,683 AUMs
c. Livestock forage biomass after application of suitability, but prior to application of actual use, utilization and trend data.	796 AUMs	3,528 AUMs
d. Average Actual Use*	825 AUMs	2,525 AUMs
e. Average Utilization	47%	44%
f. Average Proper Utilization	40% (native)	48% (native & seeding, weighted)

Computations to Arrive at Allocable Livestock AUMs

"Proper Use Capacity"
based only on utilization and actual use (see BLM Manual 4413.31):

Step 1:

$$\frac{\text{Average Actual Use (AUMs)}}{\text{Average Utilization (\%)}} = \frac{\text{X (Proper Use Capacity AUMs)}}{\text{Average Proper Utilization (\%)}}$$

Step 2:

$$\frac{\begin{pmatrix}\text{Avg. Actual}\\ \text{Use AUMs}\end{pmatrix}\begin{pmatrix}\text{Avg. Proper}\\ \text{Utilization}\end{pmatrix}}{\text{Average Utilization}} = \text{Proper Use Capacity AUMs based on Utilization and Actual Use}$$

AUMs Allocable to Livestock
Using Proper Use Capacity, Actual Use and ESIM

Step 3: ESIM recommended capacity in AUMs + the average of (*Average Actual Use [Range trend] in AUMs + Proper Use Capacity in AUMs) divided by 2 = AUMs allocable to livestock.

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* As used in Step 3, Average Actual Use also represents the level of stocking in AUMs that has resulted in a static or upward range trend. Rest-rotation grazing systems (Pleasantview and Samaria) include range trend but not average or proper utilization.

Dairy Creek Allotment

Step 1: $\frac{825 \text{ AUMs}}{47} = \frac{X \text{ AUMs}}{40}$

Step 2: $\frac{(825 \text{ AUMs})(40)}{.47} = 702 \text{ AUMs}$

Step 3: $\frac{796 \text{ AUMs} + \frac{(825 \text{ AUMs} + 702 \text{ AUMs})}{2}}{2} = 780$ AUMs allocable to livestock (rounded to nearest whole number)

South Stone Allotment

Step 1: $\frac{2525 \text{ AUMs}}{.44} = \frac{X \text{ AUMs}}{.48}$

Step 2: $\frac{(2525 \text{ AUMs})(.48)}{.44} = 2754 \text{ AUMs}$

Step 3: $\frac{3528 \text{ AUMs} + \frac{(2525 \text{ AUMs} + 2754 \text{ AUMs})}{2}}{2} = 3084$ AUMs allocable to livestock

The difference between the allocable AUMs to livestock and the total forage biomass on the allotment after application of PUFs was allocated to wildlife and non-consumptive uses.

Forage was allocated strictly on the basis of the ESIM inventory results on those allotments that did not have long-term actual use or utilization data.

APPENDIX B

Projected Production Methodology

Present Biomass production was determined from the results of an ESIM inventory conducted in the EIS area during the summers of 1977 and 1978. To project potential increases due to implementation of grazing systems and land treatments, reference was made to work done by Mueggler and Blaisdell (1958), and Gibbens and Fisser (1975). Mueggler and Blaisdell concluded that on the Snake River Plains in Idaho grass production would increase 75 percent through chemical control of sagebrush. Gibbens and Fisser found that an increase in carrying capacity of 6 percent could be expected through implementation of grazing systems that provide relief from continual grazing. These suggested possible increases from grazing management and chemical land treatments were applied to ESIM production results to calculate projected increases. Projected increases through seedings were derived from evaluation of existing seedings in the EIS area in good condition.

Studies by Hyder and Sawyer (1951), Leithead (1960) and Heady (1961) suggest that a given area, if improving or declining, changes by one condition class over a period of 15 years if management remains constant. Management variables--e.g., stocking adjustments, revised grazing systems, land treatments or whatever--likewise bring about changes in range condition if those managerial changes are of sufficient magnitude to affect range trend.

Potential total production changes due to changes in condition were calculated by determining the percent change in production from one condition class compared to another. Acreage projected to change in condition class was then multiplied by the appropriate biomass production per acre for that condition class to arrive at predicted changes in production.

APPENDIX C

Grazing Management Systems Used in the Burley District

This appendix describes the grazing systems used in the Burley District and the management premises underlying each.

Rest Rotation

Rest rotation grazing systematically provides a period (or "treatment") of rest for at least one continuous growing season for each pasture included in the allotment. Normally the number of pastures is equal to the number of separate treatments employed in the particular grazing system. Each treatment consists of a scheduled, but different, period of grazing during the grazing year. These treatments are "rotated" annually from one pasture to another to vary the periods of rest and thereby provide for the physiological needs of the vegetation.

Rest rotation systems are generally considered desirable in areas where periodic growing seasons of rest are required to restore range condition and plant vigor. They are also considered beneficial in improving forage production and vegetation composition within a relatively short period of time (five to ten years).

Three-Treatment Rest Rotation: The first treatment under this system allows grazing prior to seedripe (the date when seed from important or "key" species ripens). It provides for good livestock gains because the nutritive value of the forage is highest at this time.

The second treatment allows grazing after seedripe. Rest during the growing season allows grasses and forbs to reach maturity and produce seed and allows shrubs to improve vigor and produce plant tissue. Grazing after seed is ripened increases the likelihood of the seed being planted by livestock trampling.

The third treatment is complete rest from livestock grazing. It enables new grass and forb seedlings to become established, provides an additional year for mature plants to produce seed, and allows a full year for vegetation growth. The rest treatment also greatly increases the production of litter, which in turn builds organic material, helps stabilize the soil, increases water infiltration and reduces evaporation.

Two-Treatment Rest Rotation: This system is unique to the Samaria Allotment, which is currently divided into three pastures. The sole difference between this two-treatment and the three-treatment rest rotation systems is the absence of a prior to seedripe treatment. One third of the allotment receives complete rest each year. The remaining two thirds are grazed after flowering.

Deferred Rotation

Deferred rotation grazing consists of two or more treatments, at least one of which systematically provides rest from grazing during the critical growing period for each pasture included in the allotment. It is distinguished from rest rotation by absence of a yearlong period of complete rest. However, as under a rest rotation system, the treatments are rotated each year from one pasture to another.

Deferred rotation systems were selected for allotments where resource management objectives could be satisfied without yearlong rest periods. These systems were proposed where they were already in effect and where most of the range was in fair or good condition or in the static or upward trend class. In some cases, additional pasture diversion for a more intensive system was not considered feasible.

Two-Treatment Deferred Rotation: The first treatment under this system allows grazing prior to flowering or seedripe; this provides nutritious forage for good livestock gains. The second treatment provides rest until flowering or seedripe, enabling grasses and forbs to increase their vigor or grow to maturity. Seed may be produced and some seedlings established. After flowering or seedripe, the grazing livestock harvest the forage and trample the seeds which were produced.

Three-Treatment Deferred Rotation: This system provides for treatments (a) early grazing, (b) grazing after flowering and (c) grazing after seedripe.

Deferred Grazing

A deferred grazing system is designed to delay grazing on a portion of an allotment each year until a specified date or occurrence. Stoddart, Smith and Box (1975) explain: "Deferred grazing has certain theoretical advantages. If grazing can be deferred every few years, then forage plants have a better opportunity to reproduce. Grazing after seed maturity injures plants less and is believed to be beneficial, since animals scatter and trample the seeds into the soil, promoting seedling establishment. By allowing important forage plants to grow unhindered during the period most favorable for their growth, they are enabled to produce a greater quantity of seed. Nearly equal advantages result from deferring grazing on plants that reproduce vegetatively."

Pastures discussed in the following descriptions are not necessarily divided by fences. In some instances the pastures (areas of use) are formed by natural barriers such as ridges or steep canyons, or they may be formed by manipulating or controlling access to water.

One-Treatment Deferred: Grazing use made under this treatment is made in conjunction with other systems. Livestock use is deferred until flowering or later.

Two-Treatment Deferred: This system allows for grazing the entire allotment each year. The early use can be made in either treatment area; however, in most instances, the sequence of grazing is the same each year.

Seasonal Use Areas

Seasonal grazing is restricted to a specific season. Allotments are not necessarily divided into pastures, but are grazed at a moderate rate during the same period each year.

This system is recommended for those allotments where maintenance of range conditions is desired; where past and current livestock use has been on a seasonal basis and range is producing at a satisfactory level; or where the area is too small or composed of several isolated parcels that cannot be effectively managed under some type of intensive system.

APPENDIX D

Methodology for Determination of Musgrave Equation Factors

The potential erosion rates represent worst-case or the maximum potential erosion from intensive rain storms for sheet erosion. These rates were calculated from the Musgrave Equation:

$$E=(F)(R)(S/10)^{1.35}(L/72.6)^{0.35}(P/1.375)^{1.75}$$

The five factors were determined in the following manner:

F: The basic erosion rate was determined by use of the three soil surveys.

S: The percent slope was determined by the use of the three soil surveys, topographic maps, range suitability maps and field checks.

L. The slope length was obtained from the soil surveys, estimations from aerial photos and field checks.

R: The cover factor was derived from ESIM studies and Phase I watershed studies, and includes plant and litter cover and rock.

P: The maximum two-year frequency, 30-minute rainfall intensity (in inches) was determined from BLM Manual 7317, Illustration 7.

APPENDIX E

Stream Survey Methodology

The Bureau of Land Management and Idaho Department of Fish and Game (IDFG) have jointly assessed the condition of the aquatic habitat of streams which flow through or adjacent to BLM-administered land. Stream surveys were conducted during the summer of 1978, following a winter of above average snowfall in most mountain areas.

Objectives in formulating the methodology were:

1. Assess the condition of the aquatic habitat on designated streams through measurement of physical, chemical and biological parameters.
2. Determine what effect the grazing of domestic livestock may be having on the aquatic environment and possible remedial actions.
3. Identify unique or important aquatic habitats and make recommendations for improvement or protection of these habitats.

Materials and Methods

The survey was conducted by a two-man team who walked the survey area and rated the condition of the aquatic habitat. A modified version of a BLM "Stream Habitat Condition Evaluation" form was used to rate the habitat condition of the streams. The modifications made in the form were: 1) the inclusion of an in-stream cover category, and 2) division of the "streambank stability" category such that the right and left banks of the survey area were rated individually.

The stream section being surveyed was rated as a whole if the section was one mile or less in length and relatively homogeneous in habitat type; it was rated at least twice, once near the upper limits and once near the lower limits of the study section. When a distinct change occurred in habitat type (e.g., from meadow to canyon habitat), each area was rated separately regardless of the length of the stream section.

Within each survey area, a representative 200-foot sampling area was marked off with a steel tape. Nearly all biological, physical and chemical measurements were made within this area. A photopoint was established on all streams where biological, physical and chemical sampling was conducted.

Fish. The fish population was sampled by making a single pass through a 100-foot section in each sampling area with electrofishing equipment. Three different models of backpack shockers were used--Smith-Root Model Type V-A, Coffelt Model BP2, and Coffelt Model BP3. In some streams where a backpack shocker would have been ineffective because of high stream discharge, a Georator 1500W DC shocker was used. All fish captured were identified to the species level and measured for total length. Those fish unidentified on location were preserved in 10 percent Formalin and identified at a later time. With electrofishing units which had a timer associated with them, the length of time the electrofisher was actually in use was recorded so that a catch per unit effort could be estimated.

Aquatic Insects. Aquatic insects were collected with a modified Surber sampler designed by Dr. F. Mangum and preserved in a 1:16 mixture of Formalin/alcohol. The sampler differs from other Surber samplers in that the bag is one foot longer and six inches taller than the standard size. Three one-square-foot samples were taken in each stream and combined to form one sample. The three samples were collected randomly over the survey area. Rubble three to five inches in diameter located in riffle areas was selected for collecting insect samples. In cases where substrate of this size was not available, samples were taken in areas considered the best insect habitat for that particular stream. Fifteen samples from the Burley District were sent to Professor Mangum at Brigham Young University for analysis.

Physical Measurements

Widths. The width of the wetted surface in the stream channel was measured at fifty-foot intervals in each study area. The five widths were measured perpendicular to the direction of stream flow with a steel tape or stadia rod and rounded to the nearest foot. A mean width was calculated from the five width measurements. In cases where a split channel occurred, each channel was measured and summed to yield a single channel width.

Depths. In the sampling areas three depths were taken at each of the five width measurements. Water depth was measured at 1/4, 1/2 and 3/4 the width of the stream channel with a stadia rod and rounded to the nearest tenth of a foot. A mean depth at each width was calculated by summing the three depth measurements and dividing by five to take into account the zero depth at each bank. An overall mean depth of the entire sampling area was calculated from the mean depth of each of the five widths.

Discharge

Stream discharge was calculated using the formula $R = \frac{WDaL}{T}$:

R = stream discharge in cubic feet per second.

W = mean width of stream section measured.

D = mean depth of stream section measured.

a = a roughness coefficient of 0.8 for a rough bottom and 0.9 for a smooth bottom.

L = length of stream section measured.

T = time, as measured with a second hand of a watch, required for a 35mm film canister partially filled with water to float the length of stream section measured.

Measurements for calculating discharge were taken near the lower (downstream) boundary of the section of stream under study. A section of stream with laminar flow and uniform channel width and depth was chosen (when available) to measure discharge. A partially filled 35mm film canister was timed as it floated a known distance, generally ten feet. This was done at least three times and a mean velocity was calculated. Mean width and depth measurements were obtained in the manner previously described, but only two sets of measurements were made, one at the upper end of the measure section and one at the lower end. Discharges of some streams were so low that they could not be measured in the above manner. Here discharge was estimated in gallons per minute.

Stream Gradient. Stream gradient was calculated from U. S. Geological Survey 7.5 minute series (topographical) maps. When maps were not available, stream gradient was obtained with a hand-held level and stadia rod in the sampling area. Each gradient in this report was calculated only for the designated survey areas.

Stream Order. Stream order was determined from topographic and BLM planning unit maps for those areas of streams surveyed. A first-order stream was one with no tributaries. A second-order stream resulted from two first-order streams converging, and a third-order stream was the result of two second-order streams converging, etc. Intermittent streams were also considered when determining stream order.

Chemical Measurements. Water chemistry data was collected once per stream near the lower end of the lowest survey area. Standard Hach kits were used for the water analysis which included: Dissolved Oxygen (model No. OX-2P), ph (model No. 17-N), and Alkalinity (model No. AL-AP). Dissolved oxygen was measured in milligrams per litre, and alkalinity was measured as phenolphthalein alkalinity and methyl orange alkalinity in grains/gallon. No phenolphthalein alkalinity was found in any of the streams surveyed.

Air and water temperature in degrees Fahrenheit were recorded with a hand-held mercury thermometer. The time of day these temperatures were taken was also recorded.

A qualitative turbidity measurement was taken by estimating the depth at which the stream bottom was visible. The water was recorded as muddy if the bottom could not be seen in less than one foot of water, murky if between one and three feet and clear if the bottom could be seen in more than three feet of water.

While on location, researchers completed a one-page narrative for each stream to better describe its general characteristics and problem areas. The description consisted of the following classifications:

1. General description, including land forms, vegetation, stream order and gradient, etc.

2. Accessibility, access by roads and/or trails.

3. Area surveyed and location of BLM ownership, including location of each survey area and sampling area.

4. Weather, including weather conditions at time of survey and for the previous five days. During the summer of 1978 the weather was primarily warm and dry and had very little effect on the streams surveyed. On those streams where the weather may have affected the aquatic habitat, it is so stated in the narrative.

5. Fish sampled, including species of fish captured, their general size range and length of time shocker was operating.

6. Migration barriers, including beaver dams, debris jams, dry stream bed, etc., as well as species affected.

7. Spawning habitat, including riffle areas, adequate substrate for the species and size of fish involved,compaction of substrate, holding cover of spawners, rearing habitat for young-of-year, etc.

8. Turbidity and sources, including degree of turbidity and suspected or known reason for turbidity.

9. Beaver dams; number and approximate location, new or old activity.

10. Riparian vegetation--dominant type; deals mainly with various types of trees and their density.

11. Factors limiting fish productivity, including in-stream cover, water temperature, holding areas, substrate, available food, etc.

12. Uniqueness, including any aspect of the stream which sets it apart from other similar streams: e.g., spring fed, interruptions, ideal spawning areas, isolated fish populations, etc.

13. Location of habitat degradation, including unstable banks, close-cropped grass, compacted substrate, etc.

14. Recommendations for improvement, including suggestions on how a degraded habitat may be improved or a habitat in good condition can be maintained.

APPENDIX F

Visual Resource Inventory Methodology

The BLM has established a systematic approach to doing inventories of visual resources and setting minimum standards for management of these resources (BLM Manual 8410-11). Some minor changes have been made in this system since the visual resources inventory was completed for the Bannock-Oneida Resource Area.

A four-step process is used to determine Visual Resource Management (VRM) classes by (1) determining scenic quality, (2) determining visual sensitivity, (3) determining distance zones and (4) combining these factors on a three-way matrix.

Scenery quality is rated on the basis of landform, color, water, vegetation, uniqueness, *intrusions* and influence of adjacent scenery. The latter--influence of adjacent scenery--was not part of the rating criteria during the inventory of the Bannock-Oneida Resource Area. Numerical values are assigned to these factors according to a given set of criteria for each factor. Areas to be rated for aesthetic quality (scenic quality rating units) are delineated on an overlay according to their similar physiographic and visual patterns and their similar impacts from intrusions (human degradation of scenery). These units are rated either A (high), B (moderate) or C (low) quality scenery. (See Illustrations 4, 5.)

The second step in the analysis is the determination of visual sensitivity levels (an index to the relative degree of human response to visual changes). The criteria for determining visual sensitivity are user volume (both vehicular and pedestrian) and expressed user attitudes toward change. Based on these criteria, areas of similar sensitivity are mapped. (See Illustration 17.)

Thirdly, visual distance zones are identified as either foreground-middleground, background, or seldom seen areas. Distance zones are determined in the field by actually traveling along each route and observing the area that can be viewed, then delineating the zones on an overlay.

Upon completion of these steps, scenery quality, visual sensitivity and distance zones are overlaid to determine areas with different ratings. A three-way matrix (Illustration 23) combining these elements is utilized to determine the VRM class ratings. These Visual Resource Management classes provide guidelines or criteria for analysis of proposed management practices, project locations and design in order to provide the desired protection, rehabilitation or enhancement of the visual resources.

Management Objectives of the VRM Classes:

Class I - Provides primarily for natural ecological changes, though very limited management activities may occur. This classification applies to wilderness areas, some natural areas, wild portions of wild and scenic rivers, or other similar situations.

Class II - Provides for changes in the basic elements (form, line, color, texture) as a result of management activity. These changes should not be evident in the characteristic landscape.

Class III - Provides for visual contrasts caused by a management activity. Such contrasts may be evident but should remain subordinate to the existing characteristic landscape.

Class IV - Provides for contrasts which may attract attention and be dominant features in the landscape, though they should repeat the basic elelments of the characteristic landscape.

Class V - Identifies areas where change is needed. Naturalistic character has been disturbed to a point where rehabilitation is needed to bring the area back into character with the surrounding landscape. This is an interim, short-term classification until one of the other objectives can be reached through rehabilitation and enhancement.

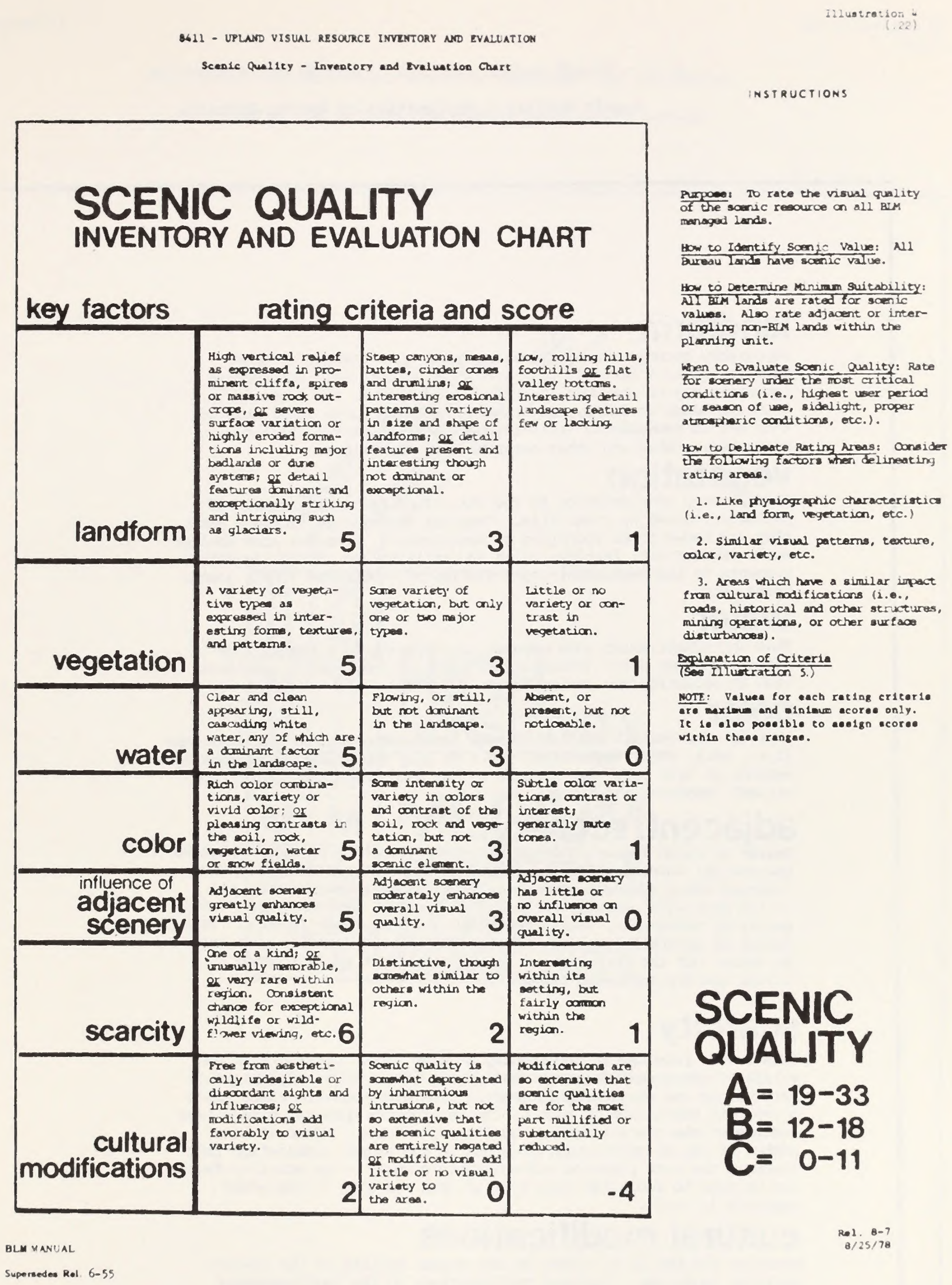

Illustration 4
(.22)

8411 - UPLAND VISUAL RESOURCE INVENTORY AND EVALUATION

Scenic Quality - Inventory and Evaluation Chart

SCENIC QUALITY
INVENTORY AND EVALUATION CHART

key factors	rating criteria and score		
landform	High vertical relief as expressed in prominent cliffs, spires or massive rock outcrops, or severe surface variation or highly eroded formations including major badlands or dune systems; or detail features dominant and exceptionally striking and intriguing such as glaciers. 5	Steep canyons, mesas, buttes, cinder cones and drumlins; or interesting erosional patterns or variety in size and shape of landforms; or detail features present and interesting though not dominant or exceptional. 3	Low, rolling hills, foothills or flat valley bottoms. Interesting detail landscape features few or lacking. 1
vegetation	A variety of vegetative types as expressed in interesting forms, textures, and patterns. 5	Some variety of vegetation, but only one or two major types. 3	Little or no variety or contrast in vegetation. 1
water	Clear and clean appearing, still, cascading white water, any of which are a dominant factor in the landscape. 5	Flowing, or still, but not dominant in the landscape. 3	Absent, or present, but not noticeable. 0
color	Rich color combinations, variety or vivid color; or pleasing contrasts in the soil, rock, vegetation, water or snow fields. 5	Some intensity or variety in colors and contrast of the soil, rock and vegetation, but not a dominant scenic element. 3	Subtle color variations, contrast or interest; generally mute tones. 1
influence of adjacent scenery	Adjacent scenery greatly enhances visual quality. 5	Adjacent scenery moderately enhances overall visual quality. 3	Adjacent scenery has little or no influence on overall visual quality. 0
scarcity	One of a kind; or unusually memorable, or very rare within region. Consistent chance for exceptional wildlife or wildflower viewing, etc. 6	Distinctive, though somewhat similar to others within the region. 2	Interesting within its setting, but fairly common within the region. 1
cultural modifications	Free from aesthetically undesirable or discordant sights and influences; or modifications add favorably to visual variety. 2	Scenic quality is somewhat depreciated by inharmonious intrusions, but not so extensive that the scenic qualities are entirely negated or modifications add little or no visual variety to the area. 0	Modifications are so extensive that scenic qualities are for the most part nullified or substantially reduced. -4

INSTRUCTIONS

Purpose: To rate the visual quality of the scenic resource on all BLM managed lands.

How to Identify Scenic Value: All Bureau lands have scenic value.

How to Determine Minimum Suitability: All BLM lands are rated for scenic values. Also rate adjacent or intermingling non-BLM lands within the planning unit.

When to Evaluate Scenic Quality: Rate for scenery under the most critical conditions (i.e., highest user period or season of use, sidelight, proper atmospheric conditions, etc.).

How to Delineate Rating Areas: Consider the following factors when delineating rating areas.

1. Like physiographic characteristics (i.e., land form, vegetation, etc.)
2. Similar visual patterns, texture, color, variety, etc.
3. Areas which have a similar impact from cultural modifications (i.e., roads, historical and other structures, mining operations, or other surface disturbances).

Explanation of Criteria
(See Illustration 5.)

NOTE: Values for each rating criteria are maximum and minimum scores only. It is also possible to assign scores within these ranges.

SCENIC QUALITY

A= 19-33
B= 12-18
C= 0-11

BLM MANUAL

Supersedes Rel. 6-55

Rel. 8-7
8/25/78

Illustration 5
(.22)

8411 - UPLAND VISUAL RESOURCE INVENTORY AND EVALUATION

Scenic Quality - Explanation of Rating Criteria

landform

Topography becomes more interesting as it gets steeper or more massive, or more severely or universally sculptured. Outstanding landforms may be monumental, as the Grand Canyon, the Sawtooth Mountain Range in Idaho, the Wrangell Mountain Range in Alaska, or they may be exceedingly artistic and subtle as certain badlands, pinnacles, arches and other extraordinary formations.

vegetation

Give primary consideration to the variety of patterns, forms, and textures created by plant life. Consider short-lived displays when they are known to be recurring or spectacular. Consider also smaller scale vegetational features which add striking and intriguing detail elements to the landscape; e.g., gnarled or windbeaten trees, joshua trees, etc.

water

That ingredient which adds movement or serenity to a scene. The degree to which water dominates the scene is the primary consideration in selecting the rating score.

color

Consider the overall color(s) of the basic components of the landscape (i.e., soil, rock, vegetation, etc.) as they appear during seasons or periods of high use. Key factors to use when in rating "color" are variety, contrast and harmony.

adjacent scenery

Degree to which scenery outside the scenery unit being rated enhances the overall impression of the scenery within the rating unit. The distance which adjacent scenery will influence scenery within the rating unit will normally range from 0-5 miles, depending upon verticality of topography, vegetative cover and other such factors. This factor is generally applied to units which would normally rate very low in score, but the influence of the adjacent unit would enhance the visual quality and raise the score.

scarcity

This factor provides an opportunity to give added importance to one or all of the scenic features that appear to be relatively unique or rare within one physiographic region. There may also be cases where a separate evaluation of each of the key factors does not give a true picture of the overall scenic quality of an area. Often it is a number of not so spectacular elements in the proper combination that produces the most pleasing and memorable scenery - the scarcity factor can be used to recognize this type of area and give it the added emphasis it needs.

cultural modifications

Consider the impact of change on the visual quality of the characteristic landscape. Cultural modifications in the landform/water, vegetation and addition of structures should be considered and may detract from the scenery in the form of a negative intrusion or actually complement or improve the scenery quality of a unit. Be careful not to confuse interest with scenery quality. Rate accordingly.

Illustration 17
(.31A5)

8411 - UPLAND VISUAL RESOURCE INVENTORY AND EVALUATION

Matrix for Determining Visual Sensitivity Levels

user attitude	quantity of use	
H	H	HIGH SENSITIVITY
H	M	
M	H	
H	L	
L	H	MEDIUM SENSITIVITY
M	M	
M	L	
L	M	LOW SENSITIVITY
L	L	

NOTE: User attitude will take precedence over quantity of use for this evaluation.

Illustration 23
(.61A)

8411 - UPLAND VISUAL RESOURCE INVENTORY AND EVALUATION

Matrix For Determining Visual Resource Management Classes

		VISUAL SENSITIVITY[2]						
		high			medium			low
special areas		I	I	I	I	I	I	I[4]
SCENIC QUALITY[1]	A	II	II	II	II	II	II	II
	B	II	III	III[5] IV	III	IV	IV	IV
	C	III	IV	IV	IV	IV	IV	IV
DISTANCE ZONES[3]		fg-mg	bg	ss	fg-mg	bg	ss	ss

1 SCENIC QUALITY..........................A, B, C
8411

2 VISUAL SENSITIVITY LEVEL................high, medium, low
8411

3 DISTANCE ZONES..........................fg-mg - foreground-middleground
8411 bg - background
ss - seldom-seen

4 MANAGEMENT CLASSES......................I, II, III, IV
8411

5 If the area being evaluated is adjacent to any VRM class III or higher, select class III; if lower, select VRM class IV.

NOTES: Class I applies only to classified special areas, e.g., Wilderness, Natural Areas, etc. This quality standard is established through legislation or policy.

Class V applies to areas identified in the scenic quality inventory where the quality class has been reduced because of unacceptable cultural modifications or areas that have the potential for enhancement.

Future and potential Class A areas or sites (identified in Recreation Information System) will be analyzed in Recreation **URA 3 and 4. Recommendations for MFP 1 (Recreation) should** specify VRM Class I, II, III to ensure future site or area protection.

APPENDIX G

Economic Data Methodology

Early in the environmental impact statement process it was determined that ranch budgets would be required in order to accurately portray the economic impacts which ranchers might experience. The economics staff of the Idaho State Office was assigned the task of collecting these budgets.

Ranch Budgeting Process

Identification of Size Groups. The first step in preparing the ranch budgets was to determine the number of ranchers in the EIS area, their herd sizes and the number of active preference AUMs and the average number of AUMs actually used over the past five years (1974-1978). This data was supplied by the Burley District Office and was then put on a computer file which was analyzed with the aid of Statistical Program for the Social Sciences (SPSS) to determine the logical herd size divisions to use in the ranch budgets. This resulted in four size groups being identified:

Group	Herd Size	Number of Operators	Percent of Total
1	0 - 49	77	31.4
2	50 - 149	83	33.9
3	150 - 299	49	20.0
4	300+	36	14.7
		245	100.0

Size Group Meetings. Letters were sent to representatives of all grazing associations in the Bannock-Oneida EIS area, identifying the size groups which had been decided upon and asking for several pieces of information. The main purpose of this letter was to solicit nominations of ranchers to represent the grazing associations in group meetings. The purpose of the group meetings would be to get several ranchers of the same size group together and gather data from them on how the "average" ranch of a given size operates and to construct a "typical" ranch budget for each size group. This letter was mailed on May 3, 1979, to all grazing associations.

Approximately two weeks later, each recipient of this letter was contacted by phone by one of the State Office staff economists in order to receive their nominations for attendance at the group meeting and to determine where and when to hold such meetings. Letters were then sent to the 46 individual ranchers nominated for participation, informing them of the time, place and purpose of the meetings. The agricultural extension agents in the four counties and the Vice President and Manager of the First Bank and Trust of Idaho, in Malad, were also notified.

A total of 23 ranchers participated in size group meetings held June 5-6, 1979, in Malad and in Rockland. A Ranch Budget Report for each size group was completed on the basis of rancher input at these meetings.

Development of the Ranch Budgets. The data on the Ranch Budget Reports was tranformed into Preliminary Ranch Budgets, one for each size group, following the basic format for an income statement as presented by Nelson, Lee and Murray (1973). These preliminary budgets were sent on June 22, 1979, to the ranchers who participated in the meetings, the county agents and the Agricultural Economics Staff at the University of Idaho. Comments received from these people were incorporated into the final budgets. The prices received for products sold were those prices identified by the Crop Reporting Service, U. S. Department of Agriculture, as being the average for Idaho in 1978:

Beef cattle, all	-	$49.90/cwt
Cows, beef	-	$37.10/cwt
Heifers and steers	-	$51.60/cwt
Calves	-	$66.80/cwt

The final budgets were then prepared and mailed to all grazing associations, the four county agents and the Vice President and Manager of the First Bank and Trust of Idaho in Malad. A letter was sent to each person, explaining that the comments had been incorporated and that these budgets would now be utilized in the Bannock-Oneida EIS to assess economic impacts to ranchers due to the various alternative actions. This final letter was mailed August 5, 1979.

Methods of Analysis

Direct Impacts. Direct impacts are those which occur directly as a result of the action under consideration. For the alternatives considered here, there are three sectors of the economy which receive direct impacts: the livestock industry, the construction industry and the recreation-related services industry.

The livestock industry experiences direct impacts from changes in the authorized livestock use in AUMs. Any decrease (or increase) in the AUMs would directly affect a rancher's income. The method used to analyze this change in income was Linear Programming (LP).

The LP models used in this analysis maximize short run income to the ranchers by allocating various sources of cattle feed (i. e., Bureau of Land Managemnt forage, alfalfa, Forest Service forage, etc.) to livestock production through cow-calf operations. The data used to develop the models was primarily that obtained through the ranch budget meetings discussed above.

Data developed for the models indicated that all sizes of ranchers are operating at a loss. If the LP models were based on conventional profit maximizing criteria, they would indicate that the ranchers should choose a zero income (choose not to operate) over a negative income. Therefore, only feed costs and returns were incorporated into the models. Other variable costs and fixed costs were included in the budgets after the model was run. The assumption behind this methodology was that ranchers' ranching decisions involving feed costs were conducted under profit maximizing criteria. Decisions involving other variable costs and fixed costs, such as whether to remain in the livestock business, were not necessarily based on expectations of high profits, but could have been based on sociological motivations.

Cattle feed sources in the model were based on Animal Unit Months (AUMs) rather than on tons of feed or acres of productive land. Livestock production was based on "Basic Animal Units" (Lewis and Taylor, 1977). They consist of set proportions of cows, bulls, replacement heifers, steers and calves. Each basic animal unit contributes to the production of livestock for final sales.

Impact analysis was based on changing the amount of forage constraints in the EIS area. No changes in productivity of private lands were included. Ranchers were limited to cow-calf production only; sale of hay was not included as an option. For other applications of linear programming to livestock ranching, see Lewis and Taylor (1977).

The construction industry experiences direct income due to installation and maintenance of range improvements and land treatments. The amount of income generated by these activities is estimated by assuming that income can be equated with wage and salary payments. Such payments equal 26 percent of the total expenditures for improvements and treatments and 80 percent of total maintenance expenditures.

The recreation-related services industry is directly impacted through increased (or decreased) hunting and fishing days which result from the various alternatives. The changes in hunter and fisherman days were supplied by the Burley District Office and are discussed in the Recreation section.

Secondary Impacts. Direct impacts cause other impacts to occur. For instance, when ranchers have less income, they purchase fewer goods and services in town, thus lowering the merchants' income. This is called the secondary impact. In order to analyze these impacts, a computer model is used. It is called the Dynamic Regional Analysis Model (DYRAM). The direct income impacts are inputted and the model calculates direct employment and secondary income and employment impacts. For example, an initial income increase in the livestock industry creates additional (or secondary) increases in both the livestock and other sectors of the economy. A multiplier estimates what this addition would be. With initial income increased by $1,000 and a multiplier of 1.5, the total income increase would be $1,500, with $500 being the additional increase estimated by the multiplier. For a detailed mathematical explanation of DYRAM, see Dickerman (1975).

Discounting. Since each alternative represents differing mixes of livestock use, construction activities and recreation use, it was decided to determine the net present value for each alternative. This results in the aggregate net income effect in the economy for the sectors involved. Present value is the amount of money today which will become a given amount at a stated time in the future. For example, at 10 percent interest, $100 will grow to $110 in one year; therefore, the present value of $110 one year from now at 10 percent interest is $100. If the end product is a series of payments, the present value is the amount that will result in the sum of the series. The net present value of each alternative, then, is the sum of the present values of the three income streams associated with livestock, construction and recreation-related services. Discounting is the procedure whereby the present value of future income is determined. The concept is the converse of growth in value due to accrued interest. The five alternatives have been discounted to reflect their present value with an assumed interest rate of 6.875 percent (established by the Water Resources Council for use by federal agencies in 1979).

APPENDIX H

Methodology/Rationale For Big Game Population Estimates

Population estimates are essential on an allotment basis in order to allocate forage to big game. All game animals in Idaho are the management responsibility of Idaho Department of Fish and Game (IDFG), while BLM is charged with managing the habitat for those animals. This division of responsibility necessitates a great deal of coordination and cooperation between the two agencies in order to develop realistic population estimates.

Mule Deer

Aerial winter range counts, coupled with IDFG's population estimates on a herd unit, served as the basis for Burley District estimates. IDFG's information was largely derived from draft Regional Species Management Plans. No population estimates were made on private or State land, or on federal lands not administered by BLM.

Mule deer are widespread and mobile throughout the EIS area. They do not respect allotment boundaries, and their use patterns vary a great deal on both a seasonal and yearly basis. The population estimates should be viewed in that light. IDFG personnel have concurred with the present (1978) population estimates; however, they do feel that these estimates are quite conservative.

Antelope

The antelope estimate is largely based on actual observations by BLM personnel over the past six years. No specific survey work has been done on the Black Pine antelope herd for many years.

Elk

The data base to estimate elk populations is very scanty. Actual observation by BLM and IDFG personnel served as the primary source of information. IDFG's draft Regional Species Management Plan also was used in deriving population estimates. IDFG feels that the elk estimates are low.

Present population estimates for big game have been carried through BLM's land-use planning process. BLM has not received any information or rationale that warrants any changes in the present estimates.

APPENDIX I

Evolution of the Proposed Action

The following describes how the Proposed Action evolved and how it integrates into overall planning for the EIS area.

Bureau Planning System

The Bureau of Land Management's land-use planning documents for the Bannock-Oneida EIS area were updated during 1977-1979 in accordance with BLM Manuals 1601-1608. These documents and other background data may be reviewed at the Burley, Idaho, BLM District Office. Land-use planning information relevant to the development of the Proposed Action is provided in the accompanying table.

Bureau resource management planning is accomplished in several stages, beginning with inventory of actual resources and ending with managerial decision documents referred to in the Bureau as Management Framework Plans (MFPs), Step III. An adversary concept is used for identifying various resource and land use conflicts; public input is encouraged and used. Final MFP III decisions for the Malad and Pocatello Planning Areas may be influenced further by the outcome of this EIS.

Once general management objectives, constraints, and guidelines have been established in the MFP, a more detailed "activity plan" can be developed for a particular resource. The livestock grazing activity plan is called an Allotment Management Plan (AMP) since each allotment would ideally have a separate plan. When the Bannock-Oneida EIS is completed, the selected grazing systems will form the basis for a new or revised AMP for each allotment.

Table A-1

Evolution of the Proposed Action

MFP I LIVESTOCK GRAZING RECOMMENDATION	MFP I NON-GRAZING CONFLICTS	MFP II MULTIPLE USE RECOMMENDATION	MFP II RECOMMENDATION RATIONALE	ENVIRONMENTAL CONSEQUENCES
Allocate forage on the allotments in the Bannock-Oneida EIS area according to the results of 1977 and 1978 vegetative inventories. Proper Use Factos, and past actual use, utilization and trend data.	Manage visual resources to prevent their degradation. Maintain status quo in Wilderness Inventory Units so as not to impair their wilderness suitability. Exclude all known cultural sites from livestock use. Improve habitat conditions for all game species in order to enhance hunting and fishing quality. Base big game forage allocation on projected population estimates for 1985 rather than on 1978 estimates.	Allocate forage to livestock on an allotment basis as provided in MFP I. Allow downward adjustments to be made by reducing livestock numbers, changing seasons of use or a combination of both over a period of three years with the full reduction coming in the last year, projected to be the 1983 grazing season. Make forage available to wildlife as it is produced in order to meet 1985 population projections.	Forage allocation for grazing in the Malad and Pocatello MFP areas is the basis for the Proposed Action to be analyzed in the Bannock Onieda EIS due in 1980. Current evidence suggests that downward adjustments would not have major economic effects on the livestock operators or the communities as a whole and would serve to improve vegetation and soil conditions.	With initial allocations on 22 allotments being above the 5-year average licensed use, scenic quality on those allotments will deteriorate. Vegetation allocations would adversely affect one (Petticoat Peak) of the five Wilderness Inventory Units through increased soil erosion potential. Increased allocation of AUMs above the 5-year average in 32 allotments would result in an increase in the intensity of impacts on cultural resources. Overall improvement in mule deer populations would occur. However, mule deer forage allocation would be deficient in nine allotments comprising one percent of the EIS area along the Downey Front.
Implement 2-and 3-pasture deferred rotation grazing systems on 185,567 acres on a portion of the Curlew Allotment, the South Bull, Houtz Canyon, Hanzel Mountain, East Fork, Roy Arbon, Indian Springs, Bancroft, Crystal, Soloago, Black Rock, Inkom, Michaud and Rapid Creek Allotments.	Terminate livestock grazing on all mule deer winter ranges after 9/30. Prohibit livestock grazing in any sage grouse nesting/brood rearing complex until after 6/10. Develop livestock grazing management systems that include sufficient rest periods to improve water quality and streambank cover.	Provide 3-pasture deferred rotation grazing on 76,835 acres. Develop and continue AMPs that provide 2-pasture deferred rotation grazing for the Indian Springs, Hanzel Mountain, Roy Arbon, East Fork, Crystal, Soloago, Black Rock, Inkom, Michaud and Rapid Creek Allotments--a total of 108,732 acres. Emphasize cooperative plans with the USFS and design the Crystal and Soloago plans to enhance critical riparian zones.	Ten allotments are located on high elevation mountain ranges with rough terrain and steep slopes. Because of physical limitations to livestock movement and poor water distribution, intensive management using more than 2 fields is not feasible. Deferment would provide protection during the critical plant development stages of flowering and seed ripening, while rotation would ensure a particular field is not subjected to the same grazing treatment each year. This would result in additional livestock and big game forage, maintenance of upland game bird habitat and protection of watershed cover and streambank stabilization.	In the deferred rotation grazing systems, fall grazing after 9/30 would result in forage conflicts on portions of the Hanzel Mountain, Roy Arbon, Michaud and Crystal allotments containing 12 percent of the total deer winter range on public land. Concentrated livestock grazing prior to 6/15 would hold populations below carrying capacity. Implementation of proposed grazing systems would not improve existing habitat conditions on streams due to a lack of sufficient rest, coupled with the fact that livestock tend to heavily utilize riparian areas before other areas of the allotment.

			In addition, the ESIM inventory indicates forage is available to satisfy the demand for livestock and wildlife while the range trend is up. Therefore, neither extensive improvement nor more intensive grazing systems can be justified.	
Implement 3- and 4-pasture rest rotation grazing systems on 158,442 acres on a portion of the Curlew Allotment, the Samaria, Pleasantview, South Stone, Dairy Creek, Big Onion and Toponce Alltoments.	Terminate livestock grazing on all mule deer winter range after 9/30. Prohibit livestock grazing in any sage grouse nesting/brood rearing complex until after 6/10.	Develop a 3-pasture rest rotation grazing system (3,320 acres) for the Big Onion Allotment. Update the Dairy Creek AMP to provide a 2-pasture deferred rotation system (7,050 acres). Update the Pleasantview, Samaria and South Stone AMPs, and develop plans for part of the Curlew Allotment and the Toponce Allotment utilizing 3-pasture rest rotation grazing (148,072).	Opportunity exists in the Big Onion Allotment to initiate a more intensive grazing system that better meets the physiological needs of key plants essential for livestock and elk forage. Ten years ago A. L. Hormay recommended the Big Onion be grazed under a 4-pasture rest rotation system. Due to a lack of water, a 2-pasture system was implemented at that time. Now that water has been developed and distributed to all areas of the allotment, a 4-pasture system can be implemented.	In the rest rotation grazing systems, fall grazing after 9/30 would result in forage conflicts on portions of the Curlew, Samaria, Toponce and Shoestring allotments containing 16 percent of the total deer winter range on public land in the EIS area. Concentrated livestock grazing prior to 6/15 would hold sage grouse populations below carrying capacity.
			Dairy Creek Allotment is unsuitable for more intensive management because of its small size and poor stock water distribution.	
			Forage in Cedar Mountain Allotment is presently licensed to two Big Onion operators on a non-renewable basis. Opportunity may exist to include this allotment as an additional early field with the Big Onion Allotment.	
			In the Toponce Allotment livestock grazing has caused streambank erosion and sedimentation along King Creek. A treatment here would provide for riparian habitat by allowing streambank stabilization.	

MFP I LIVESTOCK GRAZING RECOMMENDATION (cont'd)	MFP I NON-GRAZING CONFLICTS (cont'd)	MFP II MULTIPLE USE RECOMMENDATION (cont'd)	MFP II RECOMMENDATION RATIONAL (cont'd)	ENVIRONMENTAL CONSEQUENCES (cont'd)
Develop 1- and 2- and 3-pasture deferred use grazing totaling 44,033 acres on a portion of the Curlew, the Fish Creek, Lund and Shoestring Allotments.	Terminate livestock grazing on all mule deer winter ranges after 9/30. Prohibit livestock grazing in any sage grouse nesting/brood rearing complex until after 6/10.	For the Curlew Allotment manage the six 1-pasture areas and the 3-pasture area in the manner they are presently being used and incorporate either a rest or seedripe treatment into the 2-pasture system as it exists. Incorporate 2-pasture deferred grazing systems on the Fish Creek and Lund Allotments, and continue the USFS deferred and rest grazing system on the Shoestring Allotment.	Because of their isolation, small size or high elevation, the Curlew 1-pasture areas are not suited to more intensive development. The 2-pasture Curlew area is in a downward trend so that a rest or seedripe treatment is needed to increase plant vigor and seedling establishment. The existing 3-pasture Curlew area has resulted in upward trend or fair to good condition range. Fish Creek, Lund and Shoestring Allotments have adequate forage to support the active livestock grazing demand, and range condition is fair or good with a static range trend on fair to good condition range. Fish Creek, Lund and Shoestring Allotments have adequate forage to support the active livestock grazing demand, and range condition is fair or good with a static range trend. More sophisticated management is not required to maintain or improve vegetative conditions.	In the deferred use grazing systems, fall grazing after 9/30 would result in forage conflicts on the Fish Creek and Lund allotments that contain 2 percent of the total deer winter range on public land in the EIS area. Concentrated livestock grazing prior to 6/15 would hold sage grouse populations below carrying capacity.
Continue seasonal grazing on 56 allotments totaling 33,122 acres, keeping utilization limits tolerable to forage plants.	Terminate livestock grazing on all mule deer winter range after 9/30. Prohibit livestock grazing in any sage grouse nesting/brood rearing complex until after 6/10. Develope livestock grazing management systems that include sufficient rest periods to improve water quality and streambank cover.	Manage the allotments, with the exception of Cedar Mountain, as seasonal use areas at stocking rates derived from the vegetative inventories.	Minimum management, together with effective administration, would provide for the physiological needs of key plants and continue forage production for livestock and a variety of wildlife. The small and awkward shape of these areas limits interior divisions to facilitate management systems.	In the seasonal use grazing areas fall grazing after 9/30 would result in forage conflicts on 7 allotments containing 3 percent of the total deer winter range on public land. Concentrated livestock grazing prior to 6/15 would hold sage grouse populations below carrying capacity. Seasonal Use grazing would not improve existing stream habitat conditions. This is due to a lack of sufficient rest, coupled with the fact that livestock tend to heavily utilize riparian areas before other areas of the allotment.

<table>
<tr><td>Develop the following facilities on allotments in the EIS area to aid in better distribution of livestock and the implementation of livestock grazing systems:

32 miles of pipeline
53 troughs
2 springs
20 reservoirs
48 catchments
1 haul station</td><td>Grazing use is to be managed in the same manner and degree as when FLPMA was enacted, thus precluding significant development in the 5 inventory units.</td><td>Develop the following water facilities:
15 1/2 miles of pipeline
16 troughs
8 spring developments
2 reservoirs
2 catchments</td><td>Water is the key to implementing AMPs and distributing livestock and also provides benefits for wildlife. Water developments that are proposed inside Wilderness Inventory Units cannot be authorized because they could impair wilderness suitability.</td><td>The fencing of spring heads, catchments and reservoirs would protect these small but critically important water sites for mule deer, sage and sharp-tailed grouse and mourning doves. The proposed pipelines would increase the distribution of sage grouse and mourning doves during the summer.</td></tr>
<tr><td>Manipulate the existing vegetation (mostly sagebrush) by chemical control on slopes of less than 50 percent to increase the carrying capacity of 84,180 acres of public land by 6,963 AUMs.</td><td>Manage visual resources to prevent their degradation. Protect cultual resources from damage by soil erosion.</td><td>Limit vegetation manipulation by chemical control to 6,686 acres for a forage increase of 716 AUMs in the following allotments:
<table>
<tr><th>Allotment</th><th>Acreage</th><th>AUMs</th></tr>
<tr><td>Curlew</td><td>3,120</td><td>263</td></tr>
<tr><td>Pleasantview</td><td>1,020</td><td>123</td></tr>
<tr><td>South Bull</td><td>1,306</td><td>175</td></tr>
<tr><td>Big Onion</td><td>1,240</td><td>155</td></tr>
<tr><td>Total</td><td>6,686</td><td>716</td></tr>
</table></td><td>Modification of the MFP I recommendation was necessary to protect and preserve antelope winter forage and fawning cover; maintain sage grouse cover requirements; protect mule deer winter browse supply; and maintain the integrity of Wilderness Inventory Units. The areas to be sprayed would increase forage for livestock consumption to help meet qualified demand, while adverse effects to other resouces would be minimal.</td><td>Visual management objectives of all VRM classes would be exceeded over the short term, resulting in the degradation of visual quality in the treatment areas. Loss of ground cover resulting from vegetative manipulation would result in increased soil erosion; some unknown cultural deposits could be displaced.

The chemical spray would adversely affect 1.4 percent of crucial sage grouse habitat in the Curlew Allotment.</td></tr>
<tr><td>Manipulate the existing vegetation (mostly sagebrush) by chemical control. Drill seed the treated area to increase the carrying capacity of 8,915 acres by 3,321 AUMs.</td><td>Manage visual resources to prevent their degradation. Maintain all isolated parcels in native vegetation. Protect cultural resources from damage by soil erosion and mechanical disruption.</td><td>Manipulate vegetation by chaining and aerial seeding the following allotments, a total 1,460 acres with an increase of 611 AUMs.
<table>
<tr><th>Allotment</th><th>Acres</th><th>AUMs</th></tr>
<tr><td>T. Bloxham</td><td>70</td><td>32</td></tr>
<tr><td>R. Davis</td><td>300</td><td>132</td></tr>
<tr><td>Egan</td><td>600</td><td>256</td></tr>
<tr><td>Fuhriman</td><td>30</td><td>13</td></tr>
<tr><td>Kent</td><td>40</td><td>20</td></tr>
<tr><td>McNee</td><td>120</td><td>49</td></tr>
<tr><td>P. Morrison</td><td>100</td><td>35</td></tr>
<tr><td>Right Hand Grazing</td><td>200</td><td>74</td></tr>
<tr><td>Total</td><td>1,460</td><td>611</td></tr>
</table></td><td>To maintain a variety of wildlife habitat the MFP I chemical treatment acreage was reduced to protect browse and forbs critical for antelope and sage grouse, critical deer winter range, waterfowl nesting, stream fisheries and the Wiregrass Reservoir fishery. Additional acreage was eliminated from treatment because of steep topography and soil limitations. Chaining and drill seeding of the remaining areas would be an acceptable means of increasing forage to meet the range users' grazing demand and improve watershed conditions without sacrificing other resource values.</td><td>Visual management objectives of all VRM classes would be exceeded over both the short and long term, as vegetation contrasts would be reduced. Loss of ground cover and mechanical disturbance of the soil resulting from chaining could cause damage to unknown cultural resources - either from soil erosion or displacement caused by uprooting vegetation.</td></tr>
</table>

MFP I LIVESTOCK GRAZING RECOMMENDATION (cont'd)	MFP I NON-GRAZING CONFLICTS (cont'd)	MFP II MULTIPLE USE RECOMMENDATION (cont'd)	MFP II RECOMMENDATION RATIONALE (cont'd)	ENVIRONMENTAL CONSEQUENCES (cont'd)
On slopes of 20 percent or less, manipulate the vegetation (mostly juniper) by chaining and drill seeding 7,800 acres of public land to increase the carrying capacity by 3,058 AUMs.	Manage visual resources to prevent their degradation. Protect visual quality adjacent to Interstate 80N. Protect cultural resources from damage by soil erosion. Continue current stipulations to protect the ferruginous hawk from adverse man-caused impacts.	Manipulate vegetation by chaining and aerial seeding areas in the Curlew Allotment totaling 11,980 acres for a 4,380-AUM increase.	Chaining is an effective method for juniper eradication. Adverse effects to other resource values would be minimal. The visual impact would be minimized by controlling the treatment area shape, location and size to blend with the landscape. Wildlife habitat would be maintained, since chaining does not damage forbs and would easily leave 20 percent sagebrush cover to meet antelope needs. Chaining and drill seeding cannot be allowed in Wilderness Inventory Units because it could impair wilderness suitability.	Visual management objectives of all VRM classes would be exceeded over the short term, resulting in the degradation of visual quality. Chaining projects along I-80N would disrupt visual quality, resulting in visual sensitivity being adversely affected. Loss of ground cover and mechanical disturbance of the soil resulting from chaining could result in damage to unknown cultural resources - either from soil erosion or displacement caused by uprooting vegetation. The ferruginous hawk would be affected by the long-term abandonment of one nest site in Black Pine Valley. This one nest comprises 7% of the total nests identified in the valley. Chaining and aerial seeding would adversely affect 3.9 percent of the crucial sage grouse nesting and brood-rearing habitat in the Curlew Allotment.
Burn and drill seed approximately 7,000 acres of sagebrush on public land in the Curlew Allotment to increase the livestock carrying capacity by 2,546 AUMs.	Manage visual resources to prevent their degradation. Protect cultural resources from damage by soil erosion and mechanical disruption.	Burn and drill seed 600 acres in the Curlew Allotment for a 218-AUM increase.	The MFP I acreage was reduced because sage grouse winter and nesting habitat would be destroyed, and the burn would eradicate brush that offers protection for open range lambing for a sheep operation. The recommended 600-acre burn could be conducted with minimal adverse effects to other resource values.	Visual management objectives of all VRM classes would be exceeded over the short term, resulting in the degradation of visual quality. Loss of ground cover and mechanical disturbance of the soil resulting from burning and drill seeding could cause damage to unknown cultural resources.
Install cattleguards in fences on all main roads on the allotments in the EIS area to help control trespass.	Cattleguards located adjacent to Wilderness Inventory Units could increase use on potential wilderness acreage, thus possibly impairing wilderness suitability.	Install a total of 17 cattleguards on main roads on allotments in the EIS area.	Cattleguards are an effective method for livestock control and cause minimal impact to other multiple use values.	Installation of five cattleguards on roads identified as unit boundaries or which penetrate into units, would facilitate access to three of five Wilderness Inventory Units.

APPENDIX J

BLM Interrelationships

County Planning

All or portions of five counties are included in the EIS area: Bannock, Oneida, Power, Caribou, and Cassia. Although none of the county plans or zoning regulations puts binding constraints on public land management, the BLM is obligated, under Section 202 of the Federal Land Policy and Management Act, to avoid decisions that might conflict with local planning. Any potential conflicts with county planning and zoning were resolved during the formation of the Proposed Action.

Private Land

Approximately 94,500 acres of private land are included within the boundaries of allotments in the EIS area. These lands are primarily owned by permittees and would be subjected to the proposed grazing management under voluntary exchange-of-use agreements. A cooperative or integrated "Ranch Plan" with the permittee, Soil Conservation Service, Forest Service, State of Idaho, and BLM would be explored for allotments with predominantly private or State land.

U.S. Forest Service

The U.S. Forest Service administers six units of National Forest and one unit of National Grassland within the EIS area. Some 1,509 acres of Forest Service land are within allotments administered by BLM.

Of the 245 livestock operators presently using the EIS area, 79 also graze livestock on Forest Service lands, typically during the summer season. These operators have traditionally used Forest Service lands in conjunction with BLM, State, and/or private lands to support a year-round grazing operation. Therefore, coordination of seasons of use and other aspects of the grazing systems was considered when developing the Proposed Action.

U.S. Fish and Wildlife Service

The Fish and Wildlife Service conducts predator control in the EIS area under a joint agreement with BLM and the Idaho Department of Fish and Game. The control consists of aerial shooting and limited trapping of coyotes, mostly during the fall, winter, and early spring. No chemical toxicants are used.

The Fish and Wildlife Service also serves as the consulting agency under the Endangered Species Act of 1973. A formal Section 7 consultation was conducted relative to a wintering bald eagle population in Bowen Canyon.

Idaho Department of Fish and Game

The Idaho Department of Fish and Game (IDFG) has established State goals and objectives for wildlife management on public lands within the EIS area. Since wildlife habitat would be affected by the proposed grazing management (especially the grazing system stocking rate), there has been close coordination between BLM and IDFG in developing the Proposed Action. Specifically, the IDFG has cooperated with BLM in determining existing big game numbers and projecting desirable herd size for the EIS area by 1990.

Idaho Department of Parks and Recreation

The Idaho Department of Parks and Recreation has certain responsibilities for evaluating and enhancing recreation opportunities throughout the State. As a part of its program, the department has published a State Comprehensive Outdoor Recreation Plan (SCORP). This plan relies upon the continued use of lands administered by BLM or other agencies to fulfill many of the recreational needs within the State. These needs were considered in formulating the Proposed Action.

BLM presently retains grazing administration and collects annual fees from the Indian Rocks State Park, although the park is in State ownership under a BLM Recreation and Public Purposes patent.

Environmental Protection Agency

The Environmental Protection Agency (EPA) has been given initial responsibility for implementing Section 208 of the Federal Water Pollution Control Act Amendment of 1972. Under this act and Executive Order 11752, BLM is required to control water pollution that originates from large areas of public land (non-point source pollution). EPA is working through area-wide water quality management agencies and local Soil Conservation Services offices to complete plans for controlling water pollution in problem areas. Once these plans are finalized, BLM will take whatever measures necessary to comply with their requirements.

Idaho Department of Lands

The Idaho Department of Lands (IDPL) administers approximately 32,500 acres of land within allotments in the EIS area. These lands are distributed among most of the allotments; they are leased by livestock operators for grazing on ten-year terms. IDPL has tenatively agreed to accept the BLM's calculation of AUMs allowable on State lands but reserves the right to fence these lands out of the allotment and/or lease them to nonpermittees for other purposes.

Idaho Department of Health and Welfare

BLM entered into a cooperative agreement in September, 1979, with the Idaho Department of Health and Welfare, with a common objective of protecting water and air resources within the State. The agreement provides for information exchange and agency coordination in solving State water and air quality problems.

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GLOSSARY

ACRE-FOOT. The volume measurement of water that would cover one acre to a depth of one foot.

ANIMAL UNIT MONTH (AUM). The amount of forage required to sustain the equivalent of 1 cow, 1 horse, 1.6 elk, 5 sheep, 5 goats, 4 deer or 5.3 antelope for one month.

APPARENT TREND. A one-time observation (of a representative area of a vegetation type) which considers plant vigor, seedlings, surface litter and soil movement, and which compares the vegetation composition to the natural potential (climax community) of the area.

AREA OF CRITICAL ENVIRONMENTAL CONCERN (ACEC). An area within the public lands where special management attention is required "to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources or other natural systems or processes, or to protect life and safety from natural hazards" (Federal Land Policy and Management Act, 1976).

BULK DENSITY. The weight of an "oven dry" soil sample divided by its volume--the greater the bulk density, the less the pore space.

CRUCIAL HABITAT. Habitat where animals of a given species tend to concentrate, where the size and habitat quality of a crucial area can have a major effect on the size of a given population.

DISCHARGE. The volume of water--in a stream, canal or aquifer--that passes a given point within a given period of time.

DISTANCE ZONE. The area that can be seen from a travel route as foreground-middleground (up to 3-5 miles), background (from foreground-middleground up to 15 miles), and areas which are seldom seen.

DYNAMIC REGIONAL ANALYSIS MODEL (DYRAM). A computer model used to calculate secondary economic impacts. The model computes multipliers for particular industries, so that a change in income in one sector can be traced into other sectors of a regional economy. For a technical description of the model, see Annals of Regional Science (Nov., 1975), pp. 44-50.

ECOLOGICAL SITE INVENTORY METHOD (ESIM). A means of assessing the vegetation type and condition in a specified area. See Appendix A for a description of the ESIM process and its significance to vegetation allocation.

EDGE EFFECT. The effect achieved where two habitat types come together. The edge between the two merging types will be more favorable as wildlife habitat than either type considered alone.

EROSION TREND. An expression of change in erosion levels of soils. In areas where Soil Surface Factors are projected to change by less than 10 over a period of 15 years, the erosion trend is considered "static." A projected change of more than 10, either upward or downward, indicates an erosion trend "increasing" or "decreasing."

GRAZING PREFERENCE. The total number of animal unit months of livestock grazing on public lands apportioned and attached to base property owned or controlled by a permittee or lessee.

HYDROPHOBIC SOIL. Soil with water repellant surface layers.

INFILTRATION RATE. The rate at which water enters the surface soil.

INTRUSION. A feature (land and water form, vegetation, or structure) which is generally considered out of context because of excessive contrast and disharmony with the characteristic landscape.

LEGAL ACCESS. A lawful right (right-of-way or easement) to enter or pass through a given area. Cf. PHYSICAL ACCESS.

MUSGRAVE EQUATION. An equation used to estimate potential sheet erosion $[E=FR\,(S/10)^{1.35} \times (L/72.6)^{0.35} \times (P/1.375)^{1.75}]$, where E is erosion in tons per acre per year; F, the basic erosion rate of bare soil; R, the total cover (includes litter, plant cover and rock); S, the average slope percentage factor; L, the length of the contributing meander waterway; and P, the maximum two-year frequency, 30-minute rainfall.

PARKER 3-STEP. A technique for studying range trend on a long-term basis through periodic measuring and photographing of vegetative change along a 100-foot line transect.

PERMEABILITY. The porosity of a soil or its ability to transmit water or gases.

PHYSICAL ACCESS. An existing means (road or trail) of entering or passing through a given area. Cf. LEGAL ACCESS.

PLOT TREND. A method employing periodic measurements and photographs of vegetation within a selected 5 x 5-foot or 3 x 3-foot plot of land to assess range trend on a long-term basis.

PRESENT VALUE. An amount of money which will become a given amount at a stated time in the future. For example, at 10 percent interest $100 will grow to $110 in one year; therefore, the present value of $110 one year from now at 10 percent interest is $100. If the end product is a series of payments, the present value is the amount that will result in the sum of that series.

PROPER USE. A degree and time of use of current year's growth which, if continued, will either maintain or improve the range condition consistent with conservation of other natural resources.

PROPER USE FACTOR (PUF). The average weight percentage of a particular plant species, in relation to all other species, that can be safely grazed without restricting forage capacity production.

RANGE SITE DESCRIPTION. A brief technical description of the features that characterize a particular range site. Such features include physiography, climate, climax vegetation, total annual production, soils, site interpretations and any other information deemed appropriate.

SEDIMENT YIELD. The amount of sediment moved into a water course. The sediment yield is usually less than erosion rates on adjacent watersheds, where erosion rates are usually expressing soil loss.

SENSITIVITY LEVEL. As applied to visual resource management, that degree of concern expressed by the user toward scenic quality and existing or proposed visual change in a particular characteristic landscape.

SHEET EROSION. Diffuse erosion caused by runoff. Erosion occurring in the area between rills and gullies.

SOIL PRODUCTIVITY. Capacity of a soil to produce vegetation. The amount produced will vary according to plant speices and management practices.

SOIL SURFACE FACTOR (SSF). A numerical expression of surface erosion caused by wind and water as reflected by soil movement, surface litter, erosion pavement, pedestalling, rills, flow patterns and gullies. Values vary from 0 for no erosion condition to 100 for a severe condition.

STANDARD INDUSTRIAL CLASSIFICATION (SIC). A four-digit code developed for use in the classification of establishments or business activities by type.

SUITABILITY. The capability of forage-producing land to be grazed on a sustained yield basis without damage to the basic resources of the area or to adjacent areas.

TREATMENT (Grazing). A scheduled period of grazing or rest during the grazing year. An "early grazing treatment" means grazing prior to seedripe; a "seedripe treatment" means grazing after seedripe; a "yearlong rest treatment" means no grazing for an entire year.

UTILIZATION. The proportion of current year's forage production that was consumed or destroyed by grazing animals, usually expressed as a percentage.

WATER YIELD. Total precipitation less that consumed by evaporation, plus or minus changes in ground water storage.

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LIST OF PREPARERS

(In compliance with CEQ Rules and Regulations 1502.17 [Nov. 29, 1978], this list summarizes the qualifications and responsibilities of persons primarily accountable for the Bannock-Oneida EIS.)

Paul S. Card wrote the sections on Social Conditions. He joined BLM as sociologist in 1979 after two years in the Executive Office of the Governor (Idaho). Earlier, during five years with the Idaho Transportation Department, Card supervised the production of more than 400 environmental documents. He is a graduate of Eastern Washington State College, where he received baccalaureate degrees in sociology and math. He attended graduate school at University of Idaho.

Gary Carson, who acted as State Office coordinator for the Bannock-Oneida EIS, has been with BLM for 17 years, most of them spent as a range conservationist. He has a B.S. in range management from Utah State University and is now an environmental coordinator at BLM's State Office in Boise. Carson has had a part in four grazing EISs prior to this one.

David W. Corliss, district staff archaeologist, joined BLM in 1975. He holds a B.A. in anthropology from University of Washington, an M.A. in the same field from Idaho State University. A specialist in archaeology of the Pacific Northwest, Corliss wrote the early drafts of the EIS sections on Cultural Resources. He has since transferred to the Roseburg (Oregon) District after four years in Burley.

Nick James Cozakos, Burley District Manager since 1972, has been with BLM for 28 years. He holds a B.S. in range management from Utah State University and has held a broad variety of positions at the district and State level during his tenure with the Bureau. Together with Dave Vail (below), Cozakos was responsible for developing the Proposed Action for the Bannock-Oneida EIS. He also superintended the reviewing process at the district level.

Stanley C. Frazier co-authored the sections on Economics. A graduate of Oregon State University with a B.S. in agricultural economics, he has been an economist with the Bureau for five years and has contributed to six EISs. Frazier currently works out of the BLM State Office in Boise; he previously worked in the Rawlins (Wyoming) District.

Karl A. Gebhardt, who handled the sections on Water Resources, has been involved in four EISs in as many years with BLM. He served as environmental engineer and water quality specialist in the Cedar City (Utah) District before transferring to Boise as Idaho State Office hydrologist. Gebhardt took his B.S. in civil engineering at University of Utah, his M.A. in environmental engineering at Utah State University.

Mikel R. Haase, outdoor recreation planner, wrote the sections on Wilderness, Visual Resources and Recreation, and contributed to the sections on Cultural Resources. He is a graduate of University of Washington, where he earned a B.A. in environmental design, an M.S. in forestry with a specialization in recreation planning and a minor in landscape achitecture. Haase has been with BLM in the Burley District since 1978.

Tim Hartzell is Staff Chief, Division of Planning and Environmental Coordination, in the Burley District, where he has been for three of his eight years with BLM. Hartzell holds a B.S. in geography from Kent State University, and M.A. in natural resources management from University of Nevada. He served as EIS team leader and had a primary hand in the writing of Chapters 1 and 2.

Don O. Hunter, EIS technical coordinator, earned a B.S.in biology and an M.S. in wildlife ecology from Tennessee Technological University. Formerly an ecologist for the Tennessee State Department of Transportation, Hunter now serves as environmental specialist for the BLM Burley District. He has been with the Bureau since 1978.

Kurt J. Kotter, now an area manager in the Safford (Arizona) District, was wildlife biologist in the Burley District until his recent transfer. He joined BLM in 1973 after graduating from Utah State University, where he earned a B.S. in wildlife management and an M.S. in range science. Kotter was responsible for the EIS sections dealing with Wildlife.

Gary A. Madenford co-authored the sections on Soils. He holds a B.S. in soil science from California State Polytechnic University/Pomona and an M.S. and Ph.D. in soil genesis and morphology from Iowa State University. Madenford has completed six years with BLM, including a year and a half at the Denver Service Center and a like term in the Ukiah (California) District. He now serves as soil scientist at the State Office in Boise.

G. Majors, EIS editor, came to BLM in 1979. He has a B.A. in English from University of California at Berkeley, an M.A. and C.Phil. from UCLA. He has taught literature at UCLA and at Southern Illinois University and has published widely on subjects ranging from baseball to Shakespeare.

Deena A. Stanley, who co-authored the Soils sections, earned her B.S. in soil and water science from University of California at Davis. Prior to her temporary assignment with BLM, she worked for the California State Department of Conservation. She is now employed by the Parks and Recreation Department in California.

Douglas B. Stone is regional economist at the BLM State Office in Boise. He has had a hand in five EISs during his four years with the Bureau. With Stan Frazier(above), Stone co-authored the sections on Economics. He took his B.A. in political science, with specialization in quantitative methods, from Northeastern University and did graduate work in public administration at University of Maryland.

David B. Vail, Bannock-Oneida Area Manager, was responsible for the MFP recommendations from which the Proposed Action evolved. An Idahoan all his life, Vail joined BLM in 1963 after two years as a Forest Service temporary. He later became range and watershed specialist in the Boise District before assuming his present duties in 1973. He earned his B.S. from University of Idaho, majoring in forestry with a specialization in range and wildlife.

Richard F. Wright, author of the sections on Vegetation, joined BLM in 1962 after taking his B.S. in range management from Utah State University. Wright has served in various capacities in three States during his career with the Bureau. He has been in the Burley District as range conservationist and watershed specialist since 1975.

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MAP 2–1

ALLOTMENTS AND LAND STATUS

BANNOCK - ONEIDA ENVIRONMENTAL IMPACT STATEMENT

LEGEND

- ─ ALLOTMENT BOUNDARIES
- 🟨 PUBLIC LANDS
- ▭ STATE LANDS
- 🟩 NATIONAL FOREST
- ▭ NATIONAL GRASSLANDS
- 🟧 INDIAN LANDS OR RESERVATIONS
- ▭ BANKHEAD–JONES L.U. LANDS
- ▭ WILDLIFE REFUGE
- ☐ PATENTED LANDS

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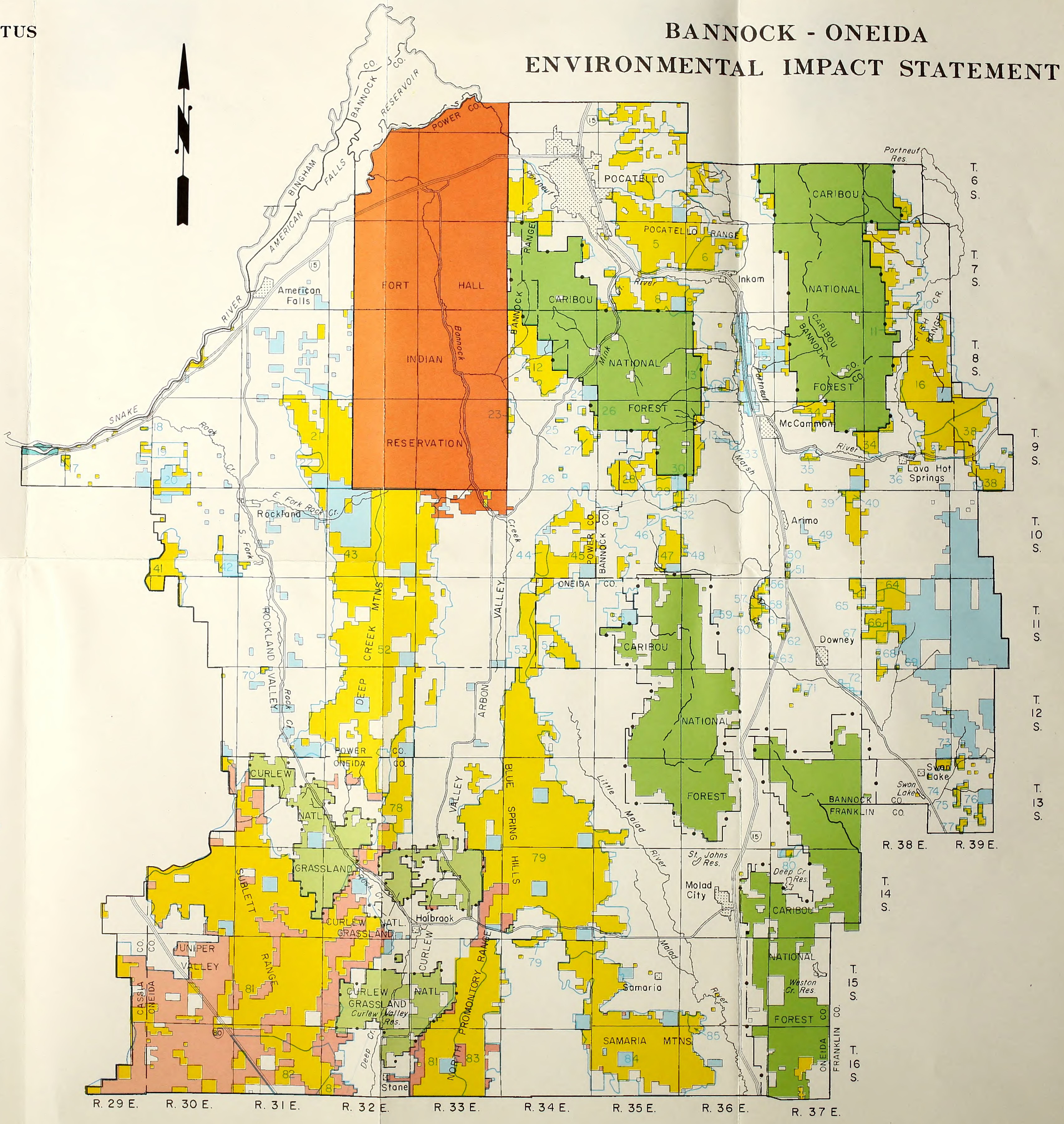

KEY

SECTION 3 LEASE AREAS

Map Ref. No.	Allotment Number	Allotment Name
1	6019	2½ Mile
2	6018	Michaud Cr.
3	6020	Moonlight Mine
4	6030	Hebdon
5	6017	Black Rock
6	6021	Rapid Creek
7	6029	Toponce
8	6022	Inkom
9	6023	Stanger
10	6033	Wistisen
11	6031	Taylor
12	6037	Crystal
13	6024	Shoestring
14	6025	Bullock
15	6047	Rocks
16	6032	Bancroft
17	5329	Cold Water
18	5334	Register Rock
19	5335	Rock Creek
20	5317	Table Mtn.
21	6016	Indian Spr.
22	6006	Walker
23	6038	Swim
24	6039	Tate Ind.
25	6040	Myler
26	6041	Garden Creek
27	6042	Stewart Ind.
28	6043	Soloago
29	6044	Rogers Ind.
30	6045	Hatley
32	6046	Preslar Ind.
33	6026	Goodenough
34	6027	McCammon
35	6028	Price
36	6035	Rowsell
37	6034	Fish Creek
38	6036	Lund
41	5316	Houtz Canyon
42	5318	Cedar Ridge
43	6014	East Fork
44	6082	Johnson
45	6009	Big Onion
46	6085	Howe
47	6010	Cedar Mtn.
52	6015	Roy Arbon
53	6084	Anderson
54	6011	Dairy Creek
55	6012	East Daniels
70	5319	Side Canyon
78	6003	South Bull
79	6004	Pleasantview
80	6013	Deep Creek
81	6001	Curlew
82	6002	South Stone
83	6008	Hanzel Mtn.
84	6005	Samaria
85	6007	Madsen

SECTION 15 LEASE AREAS

Map Ref. No.	Allotment Number	Allotment Name
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39	6080	Tippits
40	6056	N. Casperson
48	6071	Marley
49	6063	A. Evans
50	6053	A. Brady
51	6065	D. Hadley
56	6068	S. Kent
57	6060	Egan
58	6073	P. Morrison
59	6064	W. Fuhriman
60	6059	R. Davis
61	6052	T. Bloxham
62	6078	Servoss Bros.
63	6050	B. Almond
64	6079	Thompson
65	6054	C. Criddle
66	6055	Cambridge
67	6058	Criddle & Sons
68	6077	Salveson
69	6069	Larson
71	6070	McNee
72	6074	W. T. Evans
73	6061	Cottonwood
74	6067	G. Jensen
75	6081	L. Roberts
76	6076	Right Hand Grazing
77	6049	L. Allen

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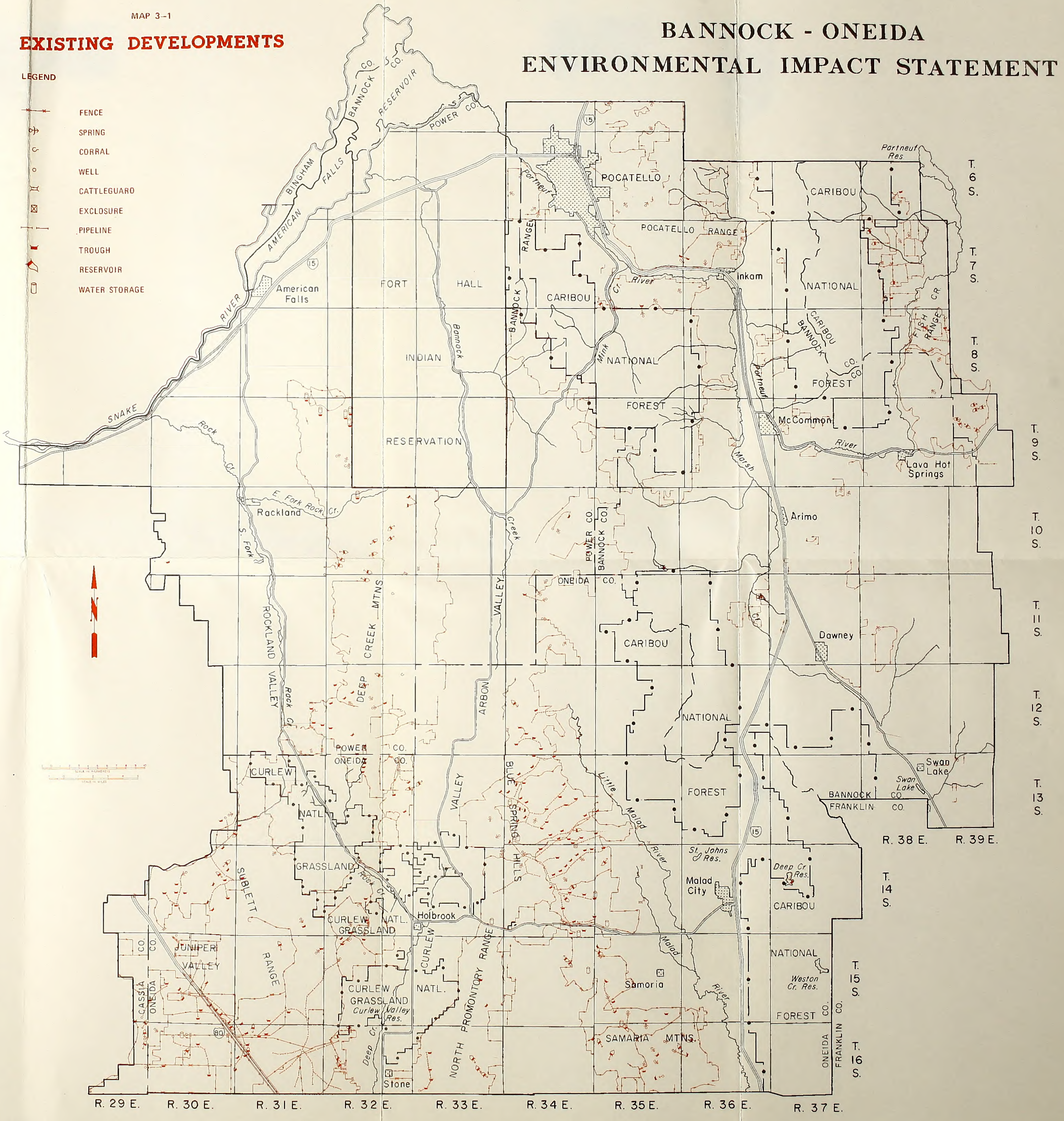
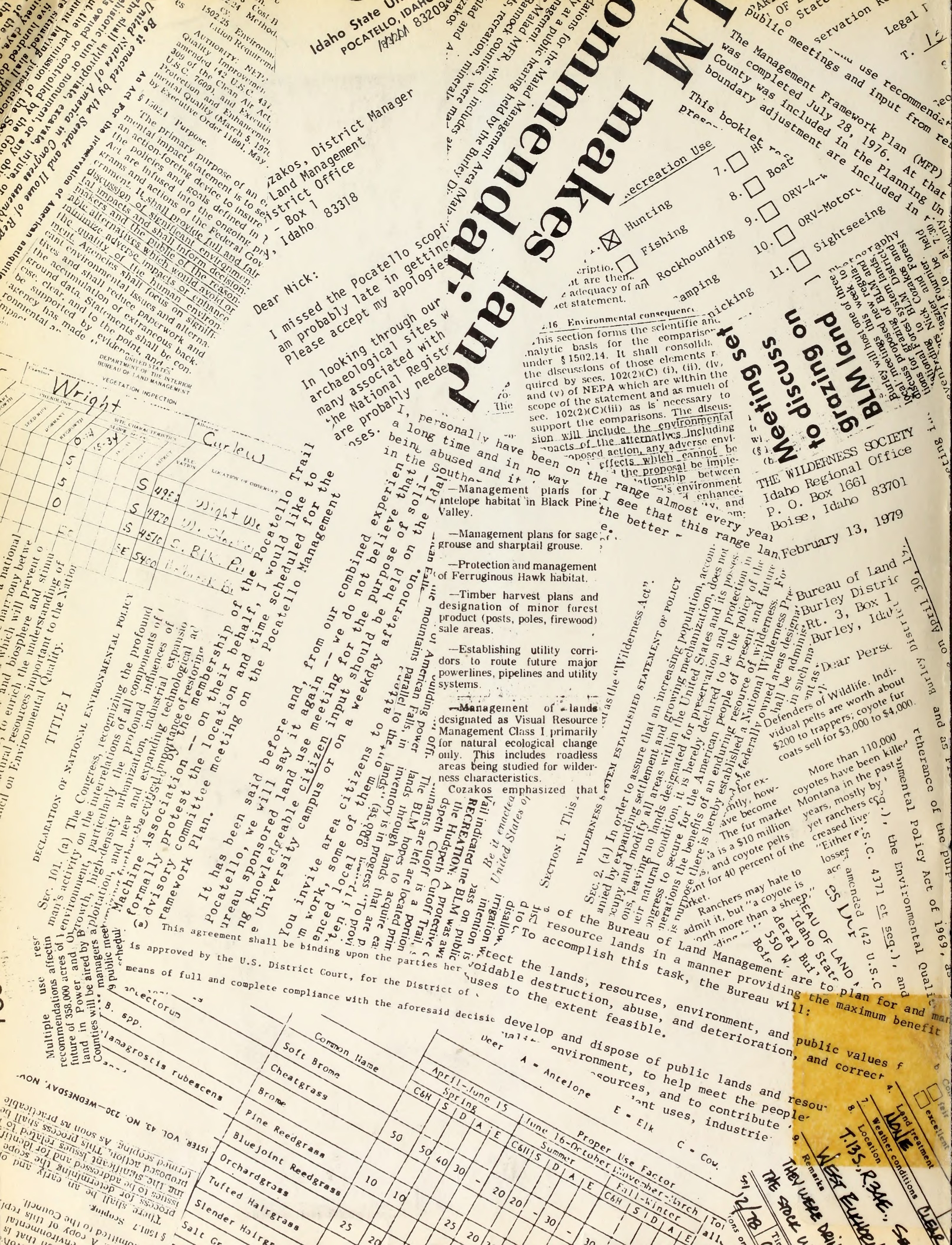
MAP 3-1

EXISTING DEVELOPMENTS

BANNOCK - ONEIDA ENVIRONMENTAL IMPACT STATEMENT




BLM makes land recommendations
Meeting set to discuss BLM land grazing on
Recreation Use
Hunting
Fishing
Rockhounding
Sightseeing
THE WILDERNESS SOCIETY
Idaho Regional Office
P. O. Box 1661
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February 13, 1979
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Burley District
Rt. 3, Box 1
Burley, Idaho
Idaho State University
POCATELLO, IDAHO 83209
TITLE I
Wilderness System Established Statement of Policy
Common Name
Proper Use Factor
VEGETATION INSPECTION
Wright
Curlew